



MEMORANDUM

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FROM: Dr. R. Edward DeWalt, Aquatic Entomologist
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DATE: 24 October 1996

SUBJECT: Surveys for aquatic macroinvertebrates
North Chicago Mitigated Wetland Project (Excess Parcel)
SW Intersection Illinois Route 137 (Buckley Road)
with U.S. Route 41 (Skokie Highway)
Job No. P-91-030-90
Lake County
IDOT District 1

INTRODUCTION

This memorandum is submitted in response to a memorandum - "Wetland Site Assessment" - from Charles Perino, IDOT to Chris Phillips and Allen Plocher (INHS) and Mike Miller (Illinois State Geological Survey). In that memorandum, several studies were to be initiated by INHS personnel, including a one-time fish and macroinvertebrate survey of areas within the study area that supported areas with permanent water. A memorandum summarizing the results of surveys for fishes in this area was submitted previously by Christopher A. Taylor (date: 3 October 1996).

Nomenclature for other aquatic macroinvertebrates and wetland vegetation discussed in this report follow the most current information for each group published in the scientific literature.

None of the aquatic macroinvertebrates discussed in this memorandum are listed as endangered and threatened at either the federal or state level, nor are any of the listed species (Herkert (1991, 1992, 1994), Illinois Endangered Species Protection Board (IESPB) (1994), or U.S. Department of Interior, Fish and Wildlife Service (USDI) (1993, 1994, 1996) thought likely to occur in the vicinity of this project site.

PROJECT LOCATION

Legal locality information for, Libertyville, Ill. (7.5' series, 1993 edition) United States Geological Survey topographic quadrangle map. Universal Transverse Mercator System coordinates are to the center of the sampling area (Site 19).

ILLINOIS, Lake County, wetland marsh and open water area, located in the southwest part of the Illinois Department of Transportation - North Chicago wetland mitigation site (formerly the 'Excess Parcel'), 1 km SW intersection Illinois Route 137 (Buckley Road) and U.S. Route 41 (Skokie Highway). Third Principal Meridian: Township 44 North, Range 12 East, NE/4, SW/4, NW/4, NW/4, Section 18. Universal Transverse Mercator System coordinates: Zone 16, 427^{140m} East, 4682^{730m} North. Elevation (water): 687' MSL.

HABITAT CHARACTERIZATION

Onsite wetland determinations for 23 specific areas in the FAP 120 project area were performed by J. W. Olson, A. K. Nugteren, M. J. Morris, and T. Brooks on 9-10 and 22-23 1991. The results of these determinations were forwarded to IDOT in the form of an INHS Transmittal Form sometime in November 1991. A detailed site inventory was completed for this mitigation site by Allen Plocher, Paul Tessene, and Jeff Olson during April, June, and September 1995, and submitted to IDOT in the form of an INHS Transmittal Form in early February 1996. The wetland delineation for Site 19 (included in the early, November 1991 Transmittal Form) is provided again here:

"This marsh is located ~1240 feet east of Waukegan Road (IL 43) and 4520 feet south of IL 137. Based on the presence of dominant hydrophilic vegetation, hydric soils, and wetland hydrology, we determined that this site is a jurisdictional wetland. This site was mapped by NWI as POW/EMF (semipermanently flooded, emergent, palustrine wetland with areas of open water)."

Wetland vegetation observed during the 6 October 1996 site visit included yellow water crowfoot (*Ranunculus flabellaris*), broad-leafed arrowhead (*Sagittaria cf. latifolia*), narrow-leafed cattail (*Typha angustifolia*), common cattail (*Typha latifolia*), mermaid-weed (*Proserpinaca palustris*), water smartweed (*Polygonum amphibium*), and *Lemna* spp.

METHODS

A standardized, qualitative dipnetting and area-wide qualitative searches were employed to investigate macroinvertebrate community structure and species richness. This standardized method was conducted in 0.3 m water among submergent and emergent aquatic vegetation. This habitat held the richest diversity of macroinvertebrates. Vigorous thrusts into the vegetation produced organic debris that was field-picked for approximately 100 individuals. This approach provided a quick method for estimating the proportions of dominant taxa. Errors in field counting produced somewhat fewer than 100 individuals.

Area-wide searching in all recognizable habitats was conducted with aquatic dipnets. Searching continued until no additional taxa were taken. This methodology was employed to obtain an estimate of instantaneous taxa richness and to look for species typical of wetland habitats. All specimens were preserved in 70% EtOH and identified to the lowest practical taxonomic category.

RESULTS

Forty-one macroinvertebrate taxa were collected during a 2 hr. period at the wetland site. Aquatic beetles from five families provided 31% of all taxa collected (Table 1). Most of these beetles were indicative of standing or slowly flowing water. The water scavenger beetle, *Paracymus confluens*, was found by both collection methods. Wooldridge (1967) described this species as preferring bog and swamp habitats. The water boatman, *Trichocorixa naias* (Kirkaldy), was numerically dominant. INHS work throughout the state has not produced this

Table 1. Aquatic macroinvertebrate taxa identified from the 4 October 1996 collections by INHS personnel Dr. R. E. DeWalt and M. J. Wetzel from Site 19, located in the southwest quadrant of the IDOT North Chicago Wetland Mitigation Project area, Lake County, Illinois. The "Standard" column shows those taxa, and their proportions, from a small standardized collection of 78 individuals. The "Area" column shows taxa found in the large area-wide search.

<u>Taxon</u>	<u>Standard</u>	<u>Area</u>
Turbellaria (Unsegmented worms)		
Planariidae (Flatworms) undetermined		X
Annelida (Segmented worms)		
Branchiobdellida (Crayfish worms) undetermined		
Oligochaeta (Aquatic worms)		
Lumbriculidae undetermined	7.8	X
Tubificidae	1.3	X
Hirudinea (Leeches)		
Erpobdellidae		
<i>Erpobdella punctata</i> (Leidy)		X
Glossiphoniidae		
<i>Helobdella stagnalis</i> (Linnaeus)		X
Mollusca		
Pelecypoda (Clams and mussels)		
Sphaeriidae		
<i>Musculium</i> sp.	1.3	X
Gastropoda (Snails)		
Lymnaeidae		
<i>Stagnicola</i> sp.		X
Physidae undetermined	2.6	X
Planorbidae		
<i>Gyraulus</i> sp.		X
<i>Helisoma</i> sp.	1.3	X
Acari		
Hydracarina undetermined		X
Crustacea		
Amphipoda (Scuds)		
Talitridae		
<i>Hyaella azteca</i> (Saussure)	9.1	X
Isopoda (Aquatic sowbugs)		
Asellidae		
<i>Caecidotea intermedia?</i> (Forbes)	16.9	X

Table 1 concluded on following page

Table 1 (concluded).

<u>Taxon</u>	<u>Standard</u>	<u>Area</u>
Insecta		
Collembola undetermined	1.3	X
Hemiptera (Aquatic true bugs)		
Corixidae		
<i>Hesperocorixa</i> sp.		X
<i>Sigara</i> sp.		X
<i>Trichocorixa naias</i> (Kirkaldy)	35.0	X
<i>Palmacorixa</i> sp.	1.3	
Veliidae		
<i>Microvelia</i> sp.	3.9	X
Lepidoptera		
Pyrilidae		
<i>Acentria</i> sp.		X
Coleoptera (Aquatic beetles)		
Curculionidae undetermined		X
Dytiscidae		
<i>Agabus</i> sp.	2.6	X
<i>Coptotomus</i> sp.		X
<i>Hydaticus</i> sp.	1.3	X
<i>Hydroporus undulatus</i> Say		X
<i>Hydrovatus</i> sp.		X
<i>Laccophilus</i> sp.		X
Halipilidae		
<i>Halipilus immaculicollis</i> Harris	1.3	X
<i>Peltodytes edentulus</i> (LeConte)		X
Hydrophilidae		
<i>Enochrus ochraceus</i> (Melsheimer)	1.3	X
<i>Paracymus confluens</i> Wooldridge	1.3	X
<i>Tropisternus lateralis nimbatus</i> (Say)		X
Lampyridae undetermined		X
Diptera (True flies)		
Ceratopogonidae		
<i>Palpomyia</i> complex		X
Chironomidae		
<i>Cricotopus</i> sg. <i>Cricotopus</i> sp.		X
<i>Natarsia</i> sp.A		X
<i>Paraphaenocladus</i> sp.	1.3	X
<i>Pseudosmittia</i> sp.		X
Syrphidae		
<i>Eristalis</i> sp.	1.3	X
Tipulidae		
<i>Helius</i> sp.	1.3	
<i>Limonia</i> sp.		X

species from flowing waters with any regularity. It may well be indicative of wetland conditions. Several other taxa have been noted as living in wetland-like conditions including the chironomid *Pseudosmittia* sp. (Epler, 1990), the crane fly *Helius* sp. (Byers, 1996), and the moth *Acentria* sp. (R. E. DeWalt, pers. obs.). The other taxa collected at this site can be found in a variety of aquatic habitats.

DISCUSSION

INHS personnel, using macroinvertebrate assemblages, are assessing the success of mitigation projects along the Elgin-O'Hare Expressway (adjacent Cook County). Preliminary data suggest that absolute taxa richness there ranges from 10-20 taxa (R. E. DeWalt, unpublished data). The methodologies used at both locations are not strictly comparable; however, a two to four multiple difference exists. The north Chicago wetland mitigation site supports a more diverse and longer-lived fauna than the Elgin-O'Hare Expressway mitigation sites. These taxa indicate a stable condition reminiscent of a more natural wetland. This is a least-impacted wetland situation that may be suitable for use as a reference wetland to measure success of local mitigation projects.

RECOMMENDATIONS

During 1995 and 1996, several periods of heavy precipitation interfered with surveys for aquatic macroinvertebrates scheduled for late spring and summer months. Most of the temporary standing water habitats had dried up before our October 1996 site visit (C. A. Phillips, INHS, pers. comm.; pers. observ.). The area's large size and diversity of habitat provide excellent conditions for aquatic macroinvertebrates. We recommend that surveys for aquatic macroinvertebrates be conducted during early May and again in early September, 1997, to more clearly identify the diversity of aquatic macroinvertebrates in this wetland complex. Emphasis will focus on several standing water areas as well as in any small tributaries which may flow into or out of this area.

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