Aurora Mastodont Project – Matrix Analyses Project
List of plant macrofossils

From unpublished draft of report on 2004 AMP
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UNIT	TAXA [a] (Latin Name, Common Name)	RELATIVE ABUNDANCE	HABITAT OF TAXA [a] (study area=southern L. Mich. basin)
	NON-VASCULAR PLANTS		
Gyttja	*Chara* (green alga) oogonia [reproductive structure]	abundant (e.g, 790 oogonia/200 gm sample)	shallow eutrophic water; precipitates marl
Gyttja	*Drepanocladus* (sickle-leaf moss)	few (2-3 stems with leaves/200 gm sample)	a fen moss, found in shallow calcareous waters
Gyttja	*Equisetum* (horsetail)	rare (stem frag)	moist soils
	TREES & SHRUBS		
Gyttja	conifer wood - charred (some *Picea* (spruce))		
Gyttja	*Picea glauca* (white spruce; seed)		well-drained soils; not in Chicago area today; in boreal forest and northern Great Lakes region
Gyttja	*Picea mariana* (black spruce; seed)		bogs; parts of Lake Michigan basin + northern Great Lakes region
Gyttja	*Picea* (seed wing)	1-2/sample; broken wing, can't id species	
Gyttja	*Picea* (needles)	moderately abundant as fragments (~ 25 needles/sample)	
Gyttja	*Juniperus communis* (common juniper)	few needles	sand dunes in Lake Michigan area
Gyttja	deciduous hardwood (wood-in process of identifying)		
Gyttja	*Populus* (poplar) seed	occasional (1-2/200 gm sample)	in study area
Gyttja	*Betula populifolia-type* (gray birch; fruit)	uncommon (1-2/sample); for sure Betula, probably B. populifolia	in study area
	MUDFLAT HERBS (Shoreline)		
Gyttja	*Chenopodium hybridium* var. *gigantospermum* (maple-leaved goosefoot)	some (2-4/200 gm sample)	disturbed areas (e.g., after fires, logging) within shaded woodlands; in study area

Gyttja	*Chenopodium rubrum* (red goosefoot; seeds smaller than other Cheno.)	fairly common (2-5/200 gm sample); doesn't inhabit region today--found in No. Great Plains were warmer & drier	disturbed areas (e.g., shoreline fluctuations, after fires)-not native to study area - but native to Northern Great Plains to the west; indicates fluctuating, drying soils
Gyttja	*Potentilla* (cinquefoil)		wet meadows; fens; lakeshores; several species in study area
Gyttja	*Ranunculus* (buttercup; crowfoot)	few (worn, couldn't id species)	wet meadows; fens; lakeshores; moist forest; streambanks; several species in study area
Gyttja	*Rumex martimus var. fueginus* (golden dock)	some (2-5/200 gm sample)	marshes; shores, streambanks, sometimes where brackish; in study area
	EMERGENTS (Aquatic-Emergents)		
Gyttja	*Carex atherodes*-type (slough sedge)	some fruit (3-6/200 gm sample)	(100+ species of Carex; this is just a type id) marshes, wet meadows, prairie swales, pond margins; usuallyin shallow waer where may form dense stands; in study area
Gyttja	*Carex rostrata-type* (beaked sedge)	common (5-10 fruits/200 gm sample)	peat mats or shallow water; in study area
Gyttja	*Carex suberecta*-type (wedge-fruited oval sedge)	some fruits (2-5/200 gm sample)	calcareous swamps & fens; marshes; wet meadows; low prairie; lake shores; in study area
Gyttja	*Cladium mariscoides* (twig-rush)	few (1-2/200 gm sample)	shallow water, sandy or mucky shores, calcium-rich wet meadoes, fens & low prairie; Midwest and to south
Gyttja	*Eleocharis palustris*-type (creeping spike-rush)	some fruits (some deterioration, can't confirm species id)	shallow water of marshes, wet meadows; mudyd shores, bogs streambanks; swamps; in study area
Gyttja	*Scirpus acutus* (hardstem-bulrush)	some fruits	emergent in shallow to deep water (1-2 m deep) of marshes, ponds & lakes; sometimes where brackish; in study area
Gyttja	**SUBMERGED AQUATICS**		
Gyttja	*Najas flexilis* (northern water-nymph)	very abundant (e.g., 72 fruit/200 gm sample)	aquatic plant; ponds, lakes, streams; usually in deep water (1-3 m); common in late Pleistocene, less common today; in study area

Gyttja	*Potamogeton filiformis* (threadleaf pondweed)	common (2-4 fruits/200-gm sample)	mostly shallow water (up to 1 m) in lakes (including Great Lakes) & rivers; in study area
Gyttja	*Potamogeton natans* (floating pondweed)	common (1-3 fruits/200-gm sample)	usually shallow water (up to 2 m deep) of ponds, lakes, rivers & peatlands; in study area
Gyttja	*Potamogeton obtusifolius* (bluntleaf-pondweed)	few fruit	lakes, ponds & streams, peatland pools; in study area
Gyttja	*Zannichellia palustris* (horned pondweed)	rare (1/sample)	brackish water indicator; unexpected to be here
	OTHER FOSSILS		
Gyttja	Freshwater bryozoans	few (2-4/sample)	
Marl	**NON-VASCULAR PLANTS**		
Marl	*Chara* (green alga) oogonia [reproductive structure]	incredibly abundant (e.g, 1300-1700 oogonia/200 gm sample)	shallow eutrophic water; precipitates marl
Marl	*Drepanocladus* (sickle-leaf moss)	few (2-3 stems with leaves/200 gm sample)	a fen moss, found in shallow calcareous waters
	TREES & SHRUBS		
Marl	conifer wood - some charred		see above
Marl	*Picea glauca* (white spruce; seed)		see above
Marl	*Picea mariana* (black spruce; needle)	1-2 intact needles are P. mariana, unsure if the frags are those of P. mariana or P. glauca	see above
Marl	*Picea* (needles)	moderately abundant as fragments (~ 25 needles/sample)	see above
Marl	deciduous hardwood (wood-in process of identifying)		see above
Marl	*Populus* (poplar) bud	occasional (1-2/200 gm sample)	see above
Marl	*Populus (poplar)* seed	occasional (1-2/200 gm sample)	see above
Marl	charcoal fragments	common	see above
Marl	*Rubus* (raspberry)	few (1-2 fruit/200 gm sample)	moist soils; several species
	MUDFLAT HERBS (Shoreline)		
Marl	*Chenopodium hybridium* var. *gigantospermum*	few (0-2/200 gm sample)	see above

Marl	*Chenopodium rubrum*	fairly common (2-5/200 gm sample); doesn't inhabit region today--found in No. Great Plains were warmer & drier	see above
Marl	*Potentilla*		see above
Marl	*Ranunculus (buttercup)*	few (worn, couldn't id species)	see above
Marl	*Rumex martimus v*ar. *fueginus*	some (2-5/200 gm sample)	see above
Marl	*Lycopus americanus* (American water-horehound)	some (2-5/200 gm sample)	wetland margins; marshes; wet meadows; lakeshores; streambanks; calcareous fens; in study area
Marl	*Mentha arvensis* var. *villosa* (wild mint or field mint)	common (5-12/200 gm sample)	wet meadows; marshes; swamps; thickets; streambanks; springs; in study area
Marl	*Polygonum hydropiperoides*-type (false water-pepper)	few (2-4/200 gm sample)	shallow water or wet soil; ponds; marshes; swamps; bogs & fens; streambanks; lakeshores; in study area
Marl	*Arabis* (cress or mustard)	few (1-3/200 gm sample)	different species each inhabit some of these: dunes; dry soil; prairie; shaded stream banks;calcareous soils; in study area
Marl	Umbelliferae (=Apiaceae)	few (1-3/200 gm sample)	family-level identification; several species, but all occupy moist soils; in study area
	EMERGENTS (Aquatic-Emergents)		
Marl	*Carex atherodes*-type (hairy-leaved lake sedge)	some fruit (3-6/200 gm sample)	see above
Marl	*Carex rostrata-type (beaked sedge)*	common (5-10 fruits/200 gm sample)	see above
Marl	*Carex suberecta*-type (many-head sedge)	some fruits (2-5/200 gm sample)	see above
Marl	*Carex typhina*-type (common cat-tail sedge)	few (1-2/200 gm sample)	floodplain forest; marshy areas; in study area
Marl	*Eleocharis palustris*-type	some fruits (some deterioration, can't confirm species id)	see above
Marl	*Scirpus acutus*	abundant (12-22 seeds/200 gm sample)	see above

Marl	*Scirpus validus* (softstem-bulrush)	common (5-10 seeds/200 gm sample)	shallow water & shores of lakes, ponds, marshes, streams & ditches; in study area
Marl	*Juncus* (rush)	few (1-2/200 gm sample); can not id species	several species, but all occupy moist soils, marshes or streambanks; in study area
Marl	*Typha latifolia* (common cat-tail)	some (2-4 fruit/200 gm sample)	marshes, lakeshores, streambanks, pond margins, usually in shallow water; common in study area
Marl	*Sagittaria latifolia* (common arrowhead)	some (2-5 fruit/200 gm sample)	shallow water, lakeshores, marshes & pools in bogs; common in study area
	SUBMERGED AQUATICS		
Marl	*Najas flexilis* (naiad)	very abundant (e.g., 72 fruit/200 gm sample)	see above
Marl	*Potamogeton filiformis*	some (2-5 fruit/200 gm sample)	see above
Marl	*Potamogeton natans*	some (2-5 fruit/200 gm sample)	see above
Marl	*Potamogeton vaginatus* (bigsheath-pondweed)	some (2-5 fruit/200 gm sample)	cold-water streams and lakes; in study area
Marl	*Potamogeton crispus* (curly pondweed)	few (1-2/sample)	shallow to deep water of lakes (incl. Great Lakes) & rivers; in study area
Marl	*Potamogeton pusillus* (slender or small pondweed)	few (1-2/sample)	shallow water (to 2 m deep) of lakes & ponds, occasionally in streams; in study area
Marl	*Ceratophyllum demersum* (common hornwort)	few (1-2/sample)	shallow to deep water of lakes, ponds; water typically neutral to alkaline; common in study area
	OTHER FOSSILS		
Marl	Freshwater bryozoans	few (2-4/sample)	
Peat	sedge peat (abundances of bulrush, not enough moss to be a moss peat)		
Peat	*Chara* (green alga) oogonia [reproductive structure]	some in lowermost sample (near marl), none above	see above
Peat	*Drepanocladus* (sickle-leaf moss)	common (several stems with leaves/200 gm sample)	see above
	TREES & SHRUBS		

Peat	deciduous hardwood (wood-in process of identifying)		
	MUDFLAT HERBS (Shoreline)		
Peat	*Chenopodium rubrum* (red goosefoot; seeds smaller than other Cheno.)	fairly common (2-5/200 gm sample); doesn't inhabit region today--found in Northern Great Plains were warmer & drier	see above
Peat	*Chenopodium capitatum* (strawberry blite)	some (2-5/200 gm sample)	disturbed ground; not in study area, found north of southern Lake Michigan basin
Peat	*Potentilla* (cinquefoil)	some (4-7/sample)	see above
Peat	*Polygonum* (smartweed)	few (2-4/sample)	see above
	EMERGENTS (Aquatic-Emergents)		
Peat	*Carex atherodes*-type (slough sedge)	some fruit (3-6/200 gm sample)	see above
Peat	*Carex rostrata-type* (beaked sedge)	very abundant (30+ fruits/200 gm sample; most abundant in this facies)	see above
Peat	*Eleocharis palustris*-type (creeping spike-rush)	some fruits (some deterioration, can't confirm species id)	see above
Peat	*Scirpus acutus* (hardstem-bulrush)	very abundant (40+ fruits/200 gm sample; most abundant in this facies)	see above
Peat	*Scirpus validus* (softstem-bulrush)	abundant (20+ fruis/200 gm sample; most abundant in this facies)	see above
Peat	*Typha latifolia* (common cattail)	common (6-12 fruits/200 gm sample)	see above
	SUBMERGED AQUATICS		
Peat	*Najas flexilis* (northern water-nymph)	very abundant (e.g., 72 fruit/200 gm sample)	see above
Buried Soil #2	very few fossils - degraded fossils (oxidized); abundant rootlets		
	NON-VASCULAR PLANTS		

Buried Soil #2	*Chara* (green alga) oogonia [reproductive structure]	few (4-8 oogonia/200 gm sample)	see above
	TREES & SHRUBS		
Buried Soil #2	charcoal fragments	few frags	
Buried Soil #2	*Salix* sp. (willow; stem piece)	few pieces	moist soils; several species; in study area
Buried Soil #2	*Populus* (poplar) bud	few (1-2/200 gm sample)	see above
	MUDFLAT HERBS (Shoreline)		
Buried Soil #2	*Rumex martimus v*ar. *fueginus*	few (1-2/200 gm sample)	see above
	EMERGENTS (Aquatic-Emergents)		
Buried Soil #2	*Scirpus acutus*	few (1-3 seeds/200 gm sample)	see above
Buried Soil #2	*Typha latifolia* (common cattail)	some (1-6 fruit/200 gm sample)	see above
Buried Soil #2	*Sagittaria latifolia*	common (2-50), but all but a few are degraded	see above
	SUBMERGED AQUATICS		
Buried Soil #2	*Potamogeton natans*	few (1-2 fruit/200 gm sample)	see above
	OTHER FOSSILS		
Buried Soil #2	insect puppa cocoon	few (1-2/sample)	
	MUDFLAT HERBS (Shoreline)		
Sandy silt[(c)]	*Chenopodium rubrum*	few (0-2/200 gm sample)	see above
	EMERGENTS (Aquatic-Emergents)		
Sandy silt[(c)]	*Scirpus acutus*	very few (0-2 seeds/200 gm sample)	see above
Sandy silt[(c)]	*Typha latifolia* (common cattail)	few (1-2 fruit/200 gm sample)	see above

(a) Taxonomy and Habitat based on:

–Chadde, S.W. 1998. *A Great Lakes Wetland Flora*. Pocketflora Press, Calumet, Michigan. 569 pp.

–Swink, F. and Wilhelm, G. 1994. *Plants of the Chicago Region*, 4th edition. Indiana Academy of Science, Morton Arboretum, Illinois. 921 pp.

(b) Peat sampled in backhoe trench F8, not in B-12 east wall.

(c) Rare fossils (almost sterile); degraded fossils (oxidized); abundant rootlets