

2022 Aquatic Plant Survey: Harrison's Bay (*Lake Minnetonka*)

(WBIC# 27-0133)

Surveyed August 3, 2022



Surveying, Analysis, and Reporting by:

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Survey & Analysis Methods

Point-Intercept Survey

Freshwater Scientific Services, LLC surveyed the aquatic plant community of Harrison's Bay (Lake Minnetonka; Hennepin Co., MN) on August 3, 2022 using the point-intercept survey method described by Madsen (1999). This survey incorporated assessments at 182 sample points arranged in a uniform grid (70-m spacing) covering the entire bay (eastern boundary designated by lake association; Figures 1 and 2).

At each designated sample location, we collected plants using a double-headed, 14-tine rake on a rope. For each rake sample, we dragged the rake over the lake bottom for approximately 5 ft before retrieving. Retrieved plants were piled on top of the rake head and assigned density scores from 1 to 4 based upon rake head coverage (Figure 3) for each individual species and for all plants collectively.

We calculated the littoral frequency (≤ 15 ft, % occurrence) and littoral mean plant abundance (density score) for each encountered plant species, as well as bay-wide and littoral community metrics (Tables 1 and 2). Plant species that were observed growing within 10 ft of a sample point but not retrieved on the rake were given a rating of zero for that location. These "zero" species were noted as being present, but these "zero" ratings were excluded from calculations of plant community metrics and statistics (not treated as denoting presence). At each location, we also documented water depth and overall plant height.



Figure 1. Sampled points for Harrison's Bay in 2022

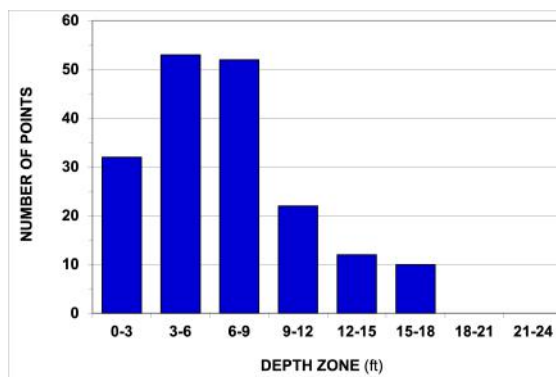


Figure 2. Sampling effort (number of locations sampled) within successive 3-ft depth zones. (Harrison's Bay, 2022)

Results

Statistical Summary of Aquatic Plant Community in Harrison's Bay

Table 1. Littoral frequency (% occurrence) and abundance (mean density score) of plant species found during the 2022 survey of Harrison's Bay. % Occurrence and mean density (0-4 scale) were calculated using all littoral points (water depth ≤15 ft). "P" denotes taxa that were observed growing but not retrieved in any rake samples.

PLANT TAXA	COMMON NAME	% Occurrence	Littoral Density
ALL TAXA (combined)		33	0.6
SUBMERSED TAXA			
<i>Ceratophyllum demersum</i>	Coontail	31	0.6
<i>Potamogeton foliosus</i>	Leafy pondweed	2	<0.1
<i>Myriophyllum spicatum</i>	Eurasian watermilfoil	1	<0.1
<i>Potamogeton zosteriformis</i>	Flat-stem pondweed	1	<0.1
<i>Aquatic Moss</i>	Aquatic moss	1	<0.1
<i>Chara</i> sp.	Muskgrass	1	<0.1
<i>Potamogeton crispus</i>	Curlyleaf pondweed	P	–
FLOATING/EMERGENT TAXA			
<i>Nymphaea odorata</i>	White waterlily	10	0.1
<i>Lemna minor</i>	Small duckweed	2	<0.1
<i>Typha</i> sp.	Cattail	1	<0.1
<i>Lythrum salicaria</i>	Purple loosestrife	P	–

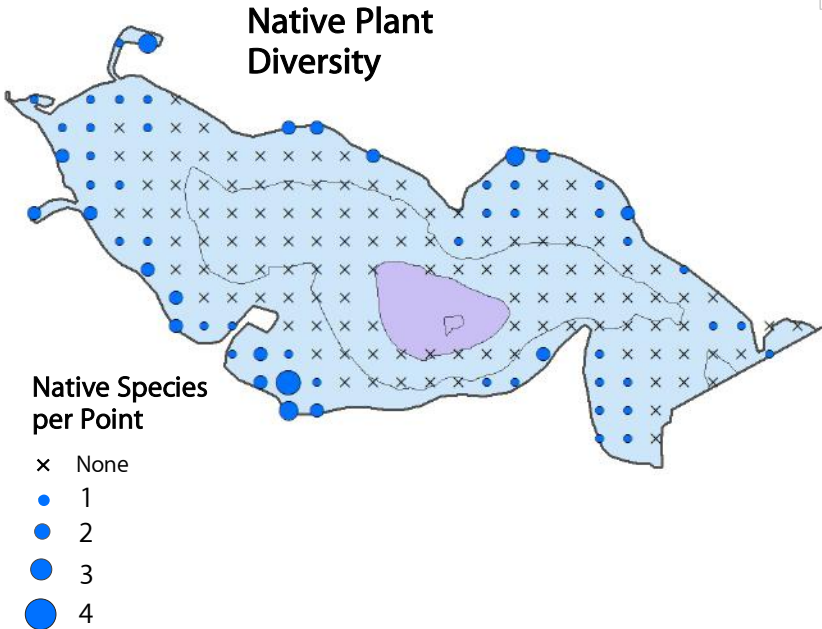
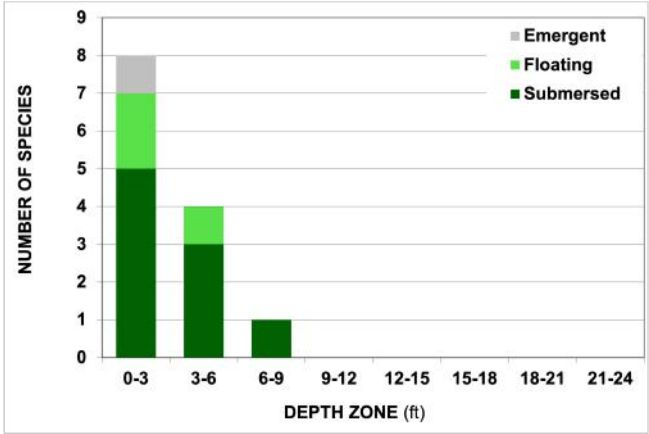
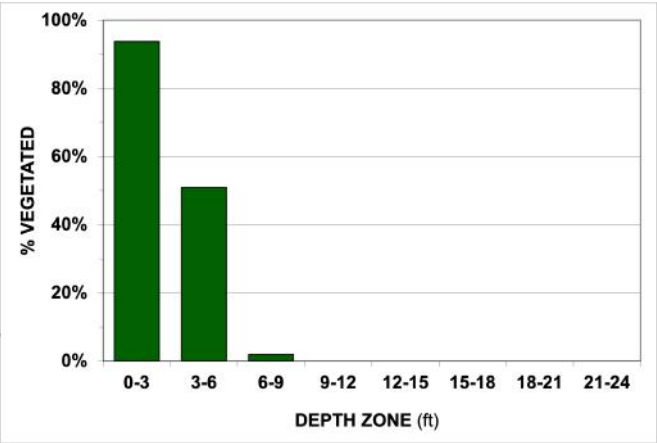
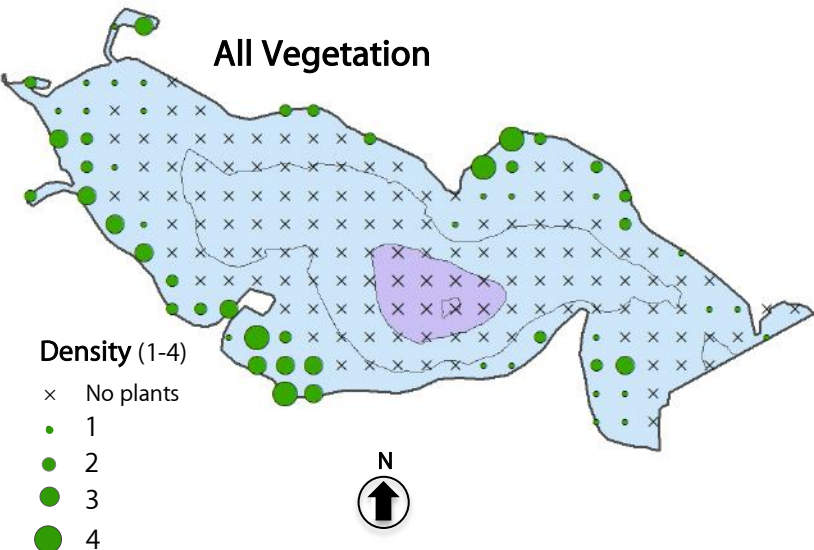
Table 2. Summary of plant community metrics for the 2022 survey conducted on Harrison's Bay

SURVEY RESULTS	AUG 2022
BAY-WIDE METRICS	
Bay Area (acres)	225
Total Points Sampled	182
% Bay Vegetated	28%
% Bay with Veg. to Surface	8%
Max Depth of Growth (95%)	5.2 ft
# Native Taxa	8
# Non-Native Taxa	2
LITTORAL METRICS (≤15 ft)	
Littoral Area (acres)	207
Littoral Points Sampled	175
% Littoral Points Vegetated	33%
Mean Littoral Plant Height (ft)	0.3 ft
% of Max Littoral Biovolume	2%
Mean Native Taxa / Point	0.5
Simpson's Diversity $((1-D)*100)$	54.2
Floristic Quality (FQI)	8.2
AMCI Score	24.0

Figure 3. Rake density scores used to assess plant abundance during point-intercept surveys

Density Score	Rake Coverage	Description
1		Only a few plants retrieved
2		Full length of rake head covered, but tines only partially covered
3		Plants completely cover the rake head and tines
4		Enough plants to cover rake head and tines multiple times

Harrison's Bay – Aquatic Plant Community

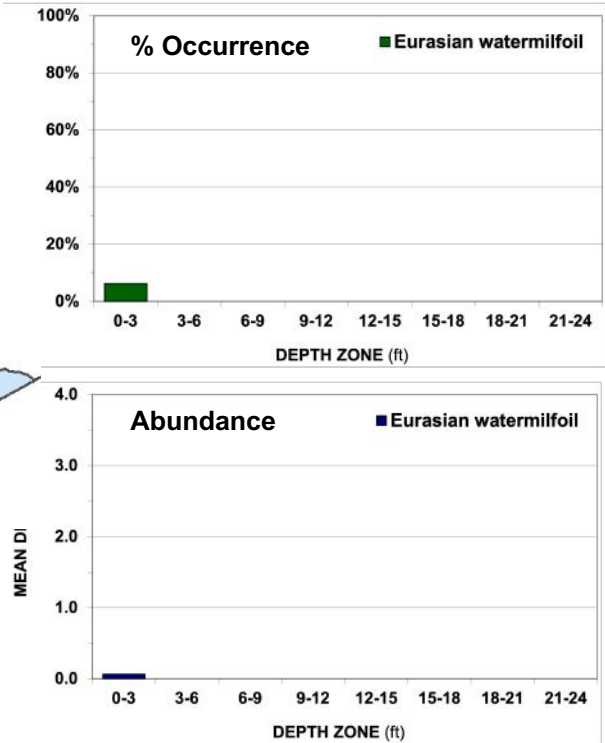
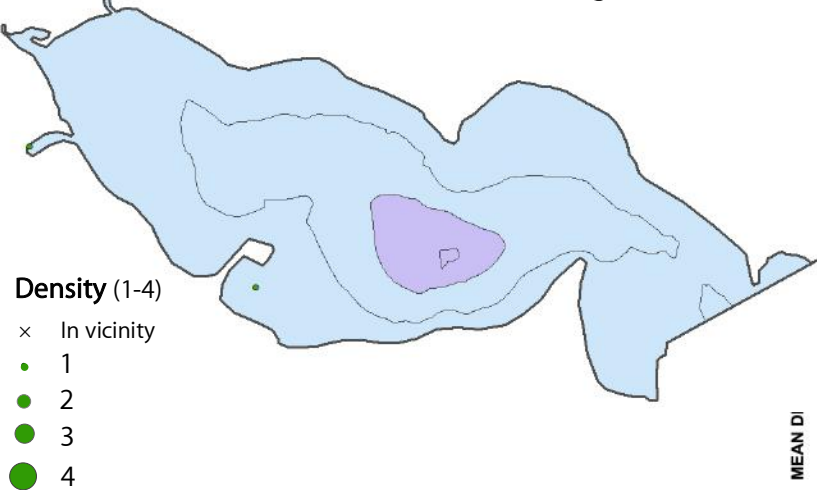


Surveyed: Aug 3, 2022
Methods: Rake, Sonar
Surveyor: JA Johnson

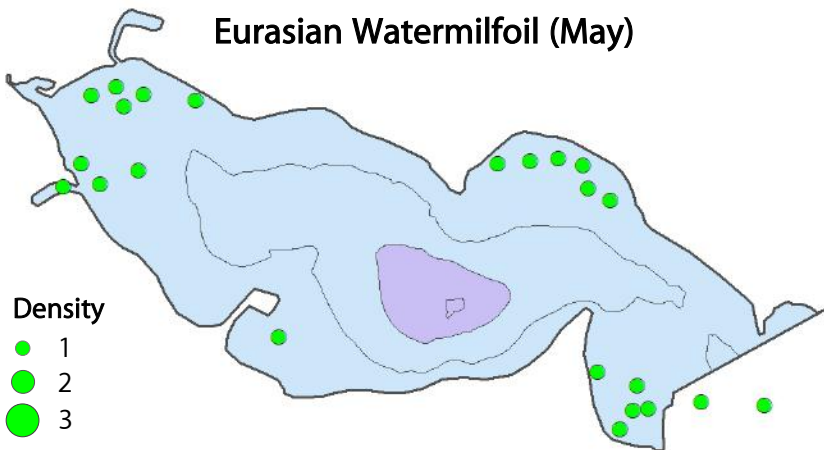


Harrison’s Bay – Eurasian Watermilfoil

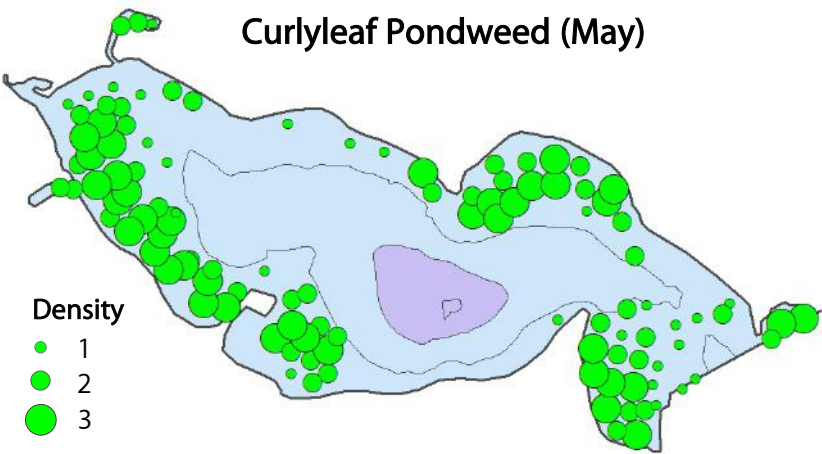
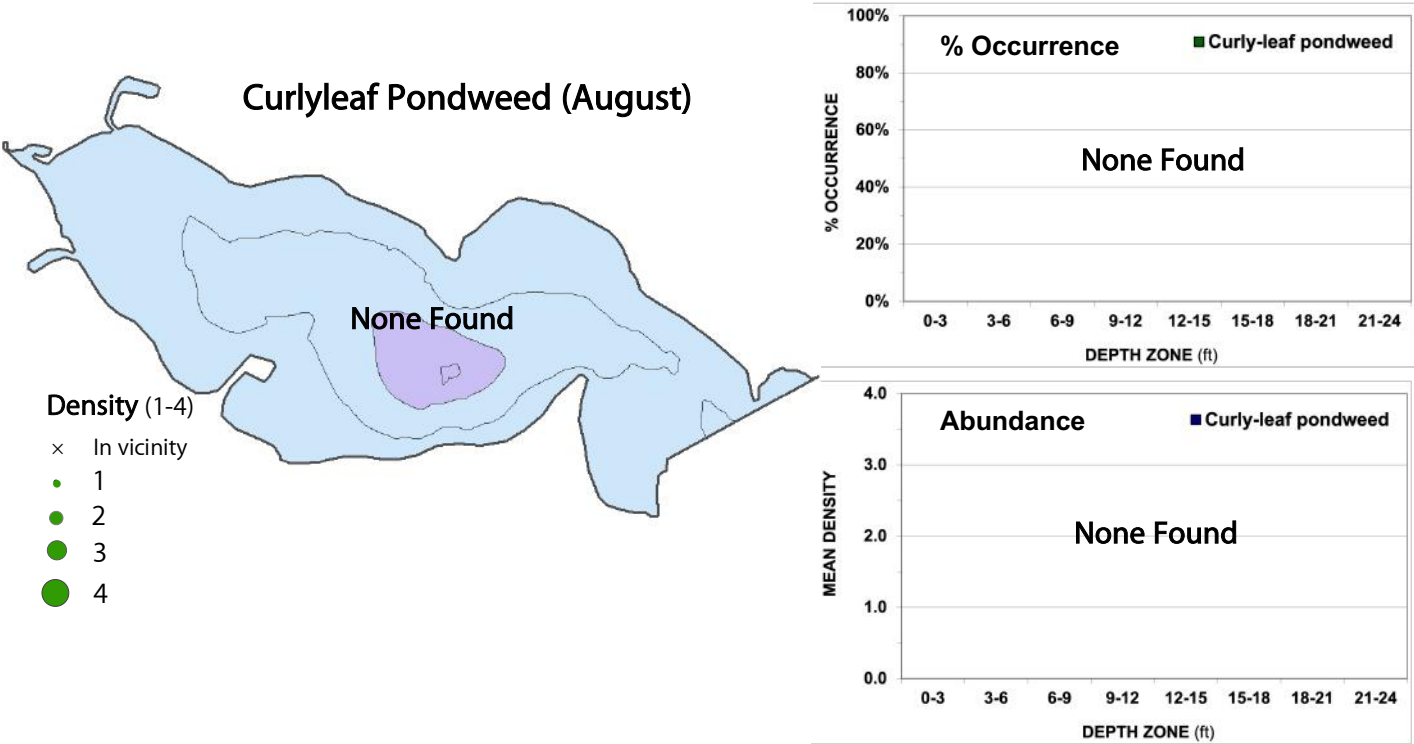
Eurasian Watermilfoil (August)



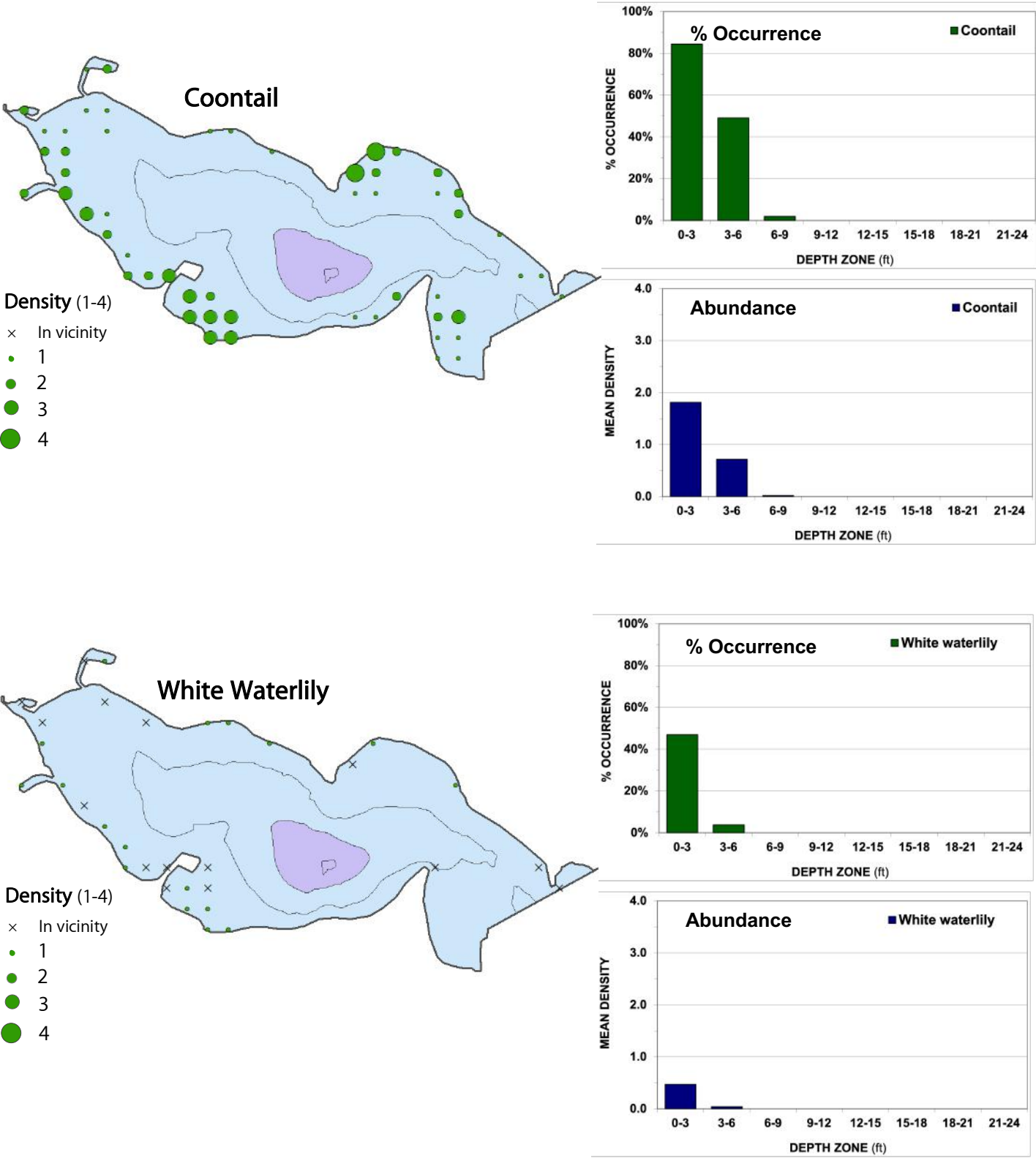
Eurasian Watermilfoil (May)



Harrison’s Bay – Curlyleaf Pondweed



Harrison’s Bay – Native Aquatic Plants



Harrison’s Bay – Native Aquatic Plants

