

Macrophyte Survey Analysis

Rice Lake, Barron County WI

WBIC: 2103900

July, 2008

Sponsored by: Rice Lake Protection and Rehabilitation District
Wisconsin Department of Natural Resources

Abstract

A point intercept macrophyte survey was conducted on Rice Lake, Barron County Wisconsin (WBIC: 2103900) on July 25-28. An early season survey for *Potamogeton crispus* was conducted on June 12 and 13. The early survey found expansive, dense coverage of *Potamogeton crispus* totaling more than 200 acres. The point intercept survey found a total of 56 species of macrophytes and a Simpson's diversity Index of 0.89. The plant coverage is 56.01% in depths less than plant growth and 45% in the entire lake. The maximum depth of plants was 16.2 feet, with most plant growth in depths less than 12 feet. The Floristic Quality Index was 36, with a mean conservatism value of 5.7.

Introduction

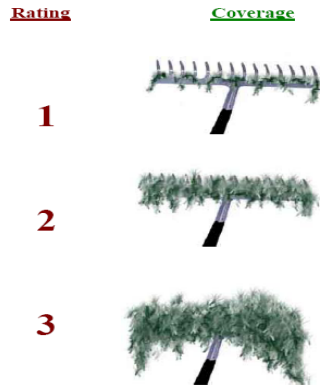
In June and late July 2008, an aquatic macrophyte survey was conducted on Rice Lake (WBIC: 2103900) in Barron County Wisconsin. Rice Lake is a 939-acre impoundment lake with a maximum depth of 19 feet. The major inlet is the Red Cedar River, which has substantial flow into the lake on the northeast portion of the lake. Development around the lakes is extensive with much of the lakeshore developed and/or disturbed from an original native riparian zone. A large portion of the immediate watershed is urban, with much of the western shore comprised of impervious surface up to or very near the shoreline.

This report presents a summary and analysis of data collected in a baseline aquatic macrophyte survey. The primary goal of the survey is to establish a baseline for long-term monitoring of aquatic plant populations and allow for the evaluation of any changes that may occur long-term. In addition, invasive species presence and locations are key components to a survey of this type. This survey is acceptable for aquatic plant management purposes.

Field methods

A point intercept method was employed for the macrophyte sampling. The Wisconsin Department of Natural Resources (Wisconsin DNR) generated the sampling point grid of 843 points for Rice Lake. All points were initially sampled until the maximum depth of plants could be established. If no plants were sampled, one sample point beyond that was sampled for plants. In areas such as bays that appear to be under-sampled, a boat survey was conducted. This involved going to the area and surveying that area for plants, recording the species viewed and/or sampled. The type of habitat was also recorded. These data are not used in the statistical analysis nor is the density recorded. Only plants sampled at predetermined sampled points were used in the statistical analysis. In addition, any plant within six feet of the boat was recorded as “viewed.” A handheld Global Positioning System (GPS) located the sampling points in the field. The Wisconsin DNR guidelines for point location accuracy were followed with an 80 ft resolution window and the location arrow touching the point.

At each sample location, a double-sided fourteen-tine rake was used to rake a 1m tow off the bow of the boat. All plants contained on the rake and those that fell off of rake were identified and rated as to rake fullness. The rake fullness value was used based on the criteria contained in the diagram and table below. Those plants that were within six feet were recorded as “viewed,” but no rake fullness rating was given.



<i>Rake fullness rating</i>	Criteria for rake fullness rating
1	Plant present, occupies less than ½ of tine space
2	Plant present, occupies more than ½ tine space
3	Plant present, occupies all or more than tine space
v	Plant not sampled but observed within 6 feet of boat

The depth and predominant bottom type was also recorded for each sample point. Caution must be used in using the sediment type in deeper water as it is difficult to discern between muck and sand with a rope rake. All plants needing verification were bagged and cooled for later examination. Each species was mounted and pressed for a voucher collection. On rare occasions a single plant may be needed for verification, not allowing it to be used as a voucher specimen and may be missing from the collection.

Data analysis methods

Data collected was entered into a spreadsheet for analysis. The following statistics were generated from the spreadsheet:

- Frequency of occurrence in sample points with vegetation (littoral zone) and points shallower than depth of plants
- Relative frequency
- Total points sampled
- Sample points with vegetation
- Simpson's diversity index
- Maximum plant depth
- Species richness
- Floristic Quality Index

An explanation of each of these data is provided below.

Frequency of occurrence for each species- Frequency is expressed as a percentage by dividing the number of sites the plant is sampled by the number of sites. There can be two values calculated for this. The first is the percentage of all sample points that this plant was

sampled at depths less than maximum depth plants were found (littoral zone), regardless if vegetation was present. The second is the percentage of sample points that the plant was sampled at only points containing vegetation. The first value shows how often the plant would be encountered in the defined littoral zone (by depth), while the second value shows if considered where points contain plants. In either case, the greater this value, the more frequent the plant is in the lake. If one wants to compare how frequent in the littoral zone, we look at the frequency of all points below maximum depth with plants. This frequency value allows the analysis of how common plants are where they could grow based upon depth. If one wants to focus only where plants are actually present, then one would look at frequency at points in which plants were found. Frequency of occurrence is usually reported using sample points where vegetation was present.

Frequency of occurrence example:

Plant A sampled at 35 of 150 littoral points = $35/150 = 0.23 = 23\%$

Plant A's frequency of occurrence = 23% considering littoral zone depths.

Plant A sampled at 12 of 40 vegetated points = $12/40 = 0.3 = 30\%$

Plant A's frequency of occurrence = 30% in vegetated areas

These two frequencies can tell us how common the plant was sampled in the littoral zone or how common the plant was sampled at points plants actually grow. Generally the second will have a higher frequency since that is where plants are actually growing as opposed to where they could grow.

Relative frequency-This value shows, as a percentage, the frequency of a particular plant relative to other plants. This is not dependent on the number of points sampled. The relative frequency of all plants will add to 100%. This means that if plant A had a relative frequency of 30%, it occurred 30% of the time compared to all plants sampled or makes up 30% of all plants sampled. This value allows us to see which of the plants are the dominant species in the lake. The higher the relative frequency the more common the plant is compared to the other plants and therefore the more frequent in the plant community.

Relative frequency example:

Suppose we were sampling 10 points in a very small lake and got the following results:

	<u>Frequency sampled</u>
Plant A present at 3 sites	3 of 10 sites
Plant B present at 5 sites	5 of 10 sites
Plant C present at 2 sites	2 of 10 sites
Plant D present at 6 sites	6 of 10 sites

So one can see that Plant D is the most frequent sampled at all points with 60% (6/10) of the sites having plant D. However, the relative frequency allows us to see what the frequency is compared the other plants, without taking into account the number of sites. It is calculated by dividing the number of times a plant is sampled by the total of all plants sampled. If we add all frequencies (3+5+2+6), we get a sum of 16. We can calculate the relative frequency by dividing by the individual frequency.

$$\text{Plant A} = 3/16 = 0.1875 \text{ or } 18.75\%$$

$$\text{Plant B} = 5/16 = 0.3125 \text{ or } 31.25\%$$

$$\text{Plant C} = 2/16 = 0.125 \text{ or } 12.5\%$$

$$\text{Plant D} = 6/16 = 0.375 \text{ or } 37.5\%$$

Now we can compare the plants to one another. Plant D is still the most frequent, but the relative frequency tells us that of all plants sampled at those 10 sites, 37.5% of them are Plant D. This is much lower than the frequency of occurrence (60%) because although we sampled Plant D at 6 of 10 sites, we were sampling many other plants too, thereby giving a lower frequency when compared to those other plants. This then gives a true measure of the dominant plants present.

Number of points sampled- This may not be the same as the total points in the sample grid. When doing a survey, we don't sample at depths outside of the littoral zone (the area where plants can grow). Once the maximum depth of plants is established, many of the points deeper than this are eliminated to save time and effort.

Sample sites with vegetation- The number of sites where plants were actually sampled. This gives a good idea of the plant coverage of the lake. If 10% of all sample points had vegetation, it implies about a 10% coverage of plants in the whole lake, assuming an adequate number of sample points have been established. We also look at the number of sample sites with vegetation in the littoral zone. If 10% of the littoral zone had sample points with vegetation, then the plant coverage in the littoral zone would be estimated at 10%.

Simpson's diversity index-To measure how diverse the plant community is, Simpson's diversity index is calculated. This value can run from 0 to 1.0. The greater the value, the more diverse the plant community is in a particular lake. In theory, the value is the chance that two species sampled are different. An index of "1" means that the two will always be

different (very diverse) and a “0” would indicate that they will never be different (only one species found). The more diverse the plant community, the better the lake ecosystem.

Simpson’s diversity example:

If one sampled a lake and found just one plant, the Simpson’s diversity would be “0.” This is because if we randomly sampled two plants, there would be a 0% chance of them being different, since there is only one plant.

If every plant sampled were different, then the Simpson’s diversity would be “1.” This is because if two plants were randomly sampled, there would be a 100% chance they would be different since every plant is different.

These are extreme and theoretical scenarios, but they demonstrate how this index works. The greater the Simpson’s index is for a lake, the greater the diversity since it represents a greater chance of two randomly sampled plants being different.

Maximum depth of plants-This depth indicates the deepest that plants were sampled. Generally more clear lakes have a greater depth of plants while lower water clarity limits light penetration and reduces the depth at which plants are found.

Species richness-The number of different individual species found in the lake. There is a number for the species richness of plants sampled, and another number that takes into account plants viewed but not actually sampled during the survey.

Floristic Quality Index-The Floristic Quality Index (FQI) is an index developed by Dr. Stanley Nichols of the University of Wisconsin-Extension. This index is a measure of the plant community in response to development (and human influence) on the lake. It takes into account the species of aquatic plants found and their tolerance for changing water quality and habitat quality. The index uses a conservatism value assigned to various plants ranging from 1 to 10. A high conservatism value indicates that a plant is intolerant while a lower value indicates tolerance. Those plants with higher values are more apt to respond adversely to water quality and habitat changes, largely due to human influence (Nichols, 1999). The FQI is calculated using the number of species and the average conservatism value of all species used in the index. The formula is:

$$FQI = \text{Mean } C \cdot \sqrt{N}$$

Where C is the conservatism value and N is the number of species.

Therefore, a higher FQI, indicates a healthier aquatic plant community. This value can then be compared to the median for other lakes in the assigned eco-region. There are four eco-regions used throughout Wisconsin. These are Northern Lakes and Forests, Northern Central Hardwood Forests, Driftless Area and Southeastern Wisconsin Till Plain. Rice Lake is in the Northern Lakes and Forests-Flowages eco-region.

Summary of Northern Lakes and Forests-Flowages Median Values for Floristic Quality Index:
(Nichols, 1999)

Mean species richness = 23.5

Mean conservatism = 6.2

Mean Floristic Quality = 28.3*

*Floristic Quality has a correlation with area of lake (+), alkalinity(-), conductivity(-), pH(-) and Secchi depth (+). In a positive correlation, as that value rises so will FQI, while with a negative correlation, as a value rises, the FQI will decrease.

Results

The Wisconsin Department of natural resources generated a 843 point grid for sampling (Figure 1). Of these points, 675 were sampled for plants due to water depth and established depth of plant growth. Points in areas far exceeding maximum depth of plants, and some points in two bays that were too shallow, were not sampled.

In Rice Lake, 358 points had vegetation. This represents approximately 43.7% of the lake with vegetation and 55.9% of the littoral zone with plants (depths less than deepest with plants). See Figure 2 to view a map of the points with vegetation. The most east bay on the north end had very high diversity of plants, many of which are emergent or floating species. Many points could not be sampled here due to the shallow depths and the extensive plant growth. It is possible more new species are present but weren't sampled.

The bay on the west shoreline near the hospital was very dense with plants. A large area of cattail dominates the bay with a large area not navigable. A few points could not be sampled here due to shallow depths, but many plants were present.

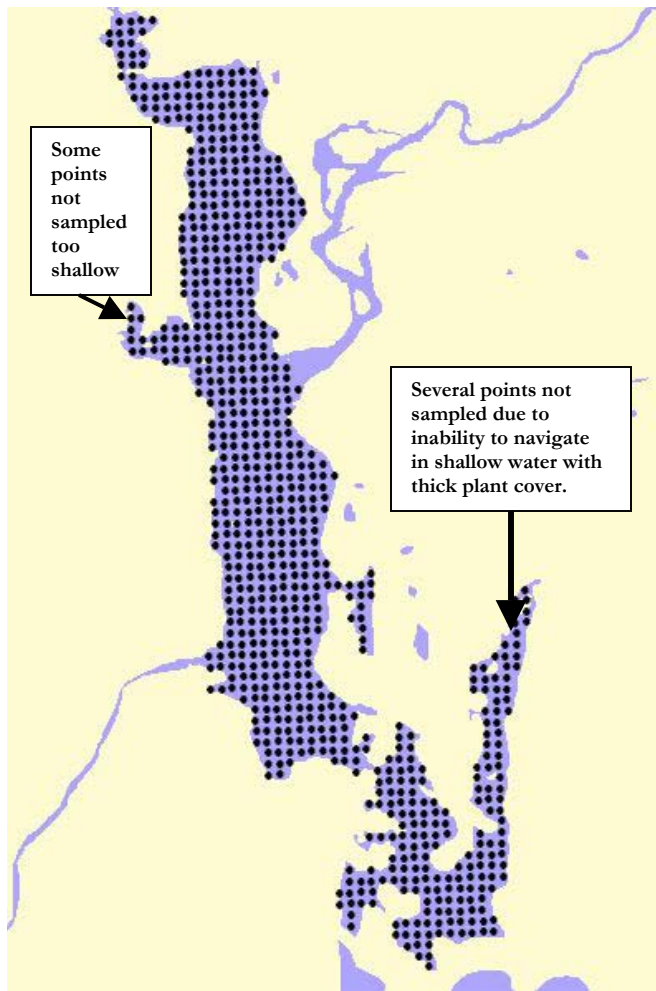


Figure 1: Sample point grid for Rice Lake

The greatest depth with plants sampled was 16.2 feet. This indicates that the water clarity allows enough light penetration through much of the growing season to 16 feet. Most points this deep did not have plant growth and the vast majority of the plant growth was less than 12 feet. This observation is consistent with the limited water clarity observed during the survey dates.

SUMMARY STATS	
Total number of points	843
Total number of sites with vegetation	368
Total number of sites shallower than maximum depth of plants	658
Frequency of occurrence at sites shallower than maximum depth of plants	55.9%
Frequency of occurrence at all sites (based upon maximum depth of plants)	43.7%
Maximum depth of plants (ft)	16.2
Average number of all species per site (veg. sites only)	3.52
Average number of native species per site (veg. sites only)	3.42
Simpson Diversity Index	0.89
Species Richness	41
Species Richness (including visuals)	56

Table 1: Summary of survey statistics

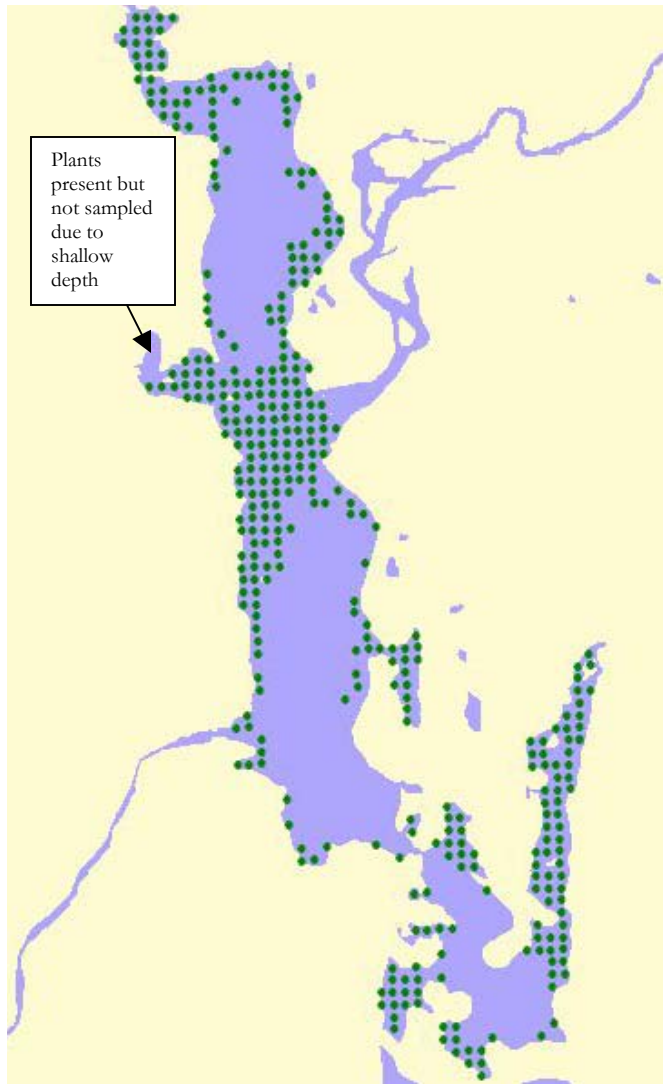


Figure 2: Map of sample points with vegetation present

The most common sediment type was rock. Determining the sediment type during a plant survey is difficult as a rake and sight are used to determine the dominant sediment. As a result, deeper areas are difficult. However, rock was very common and easier to discern from muck and sand. There seems to be thin layer of muck over the rock in many areas. In addition, many of the bays had predominantly muck sediments and near the mouth of the Red Cedar River. The points not sampled have no sediment type recorded.

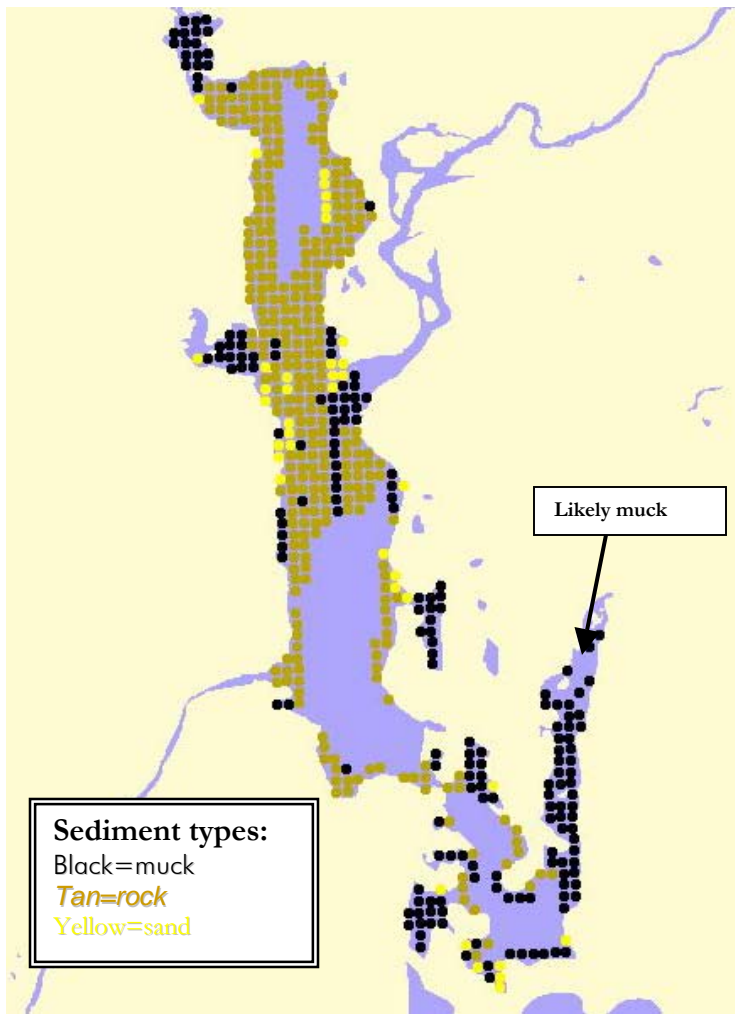


Figure 3: Predominant sediments at sample points

Several sample points had no plants while some points had high diversity. Figure 4 is a map of diversity at locations plants were sampled. The predominant diversity seems to occur in the north end (Stump Lake region), in the sediment outflow at the mouth of the Red Cedar River, and two bays in the southern end of the lake. Most of these areas have suitable substrate for plant growth with high nutrient substrates (muck) in these areas (Figure 3).

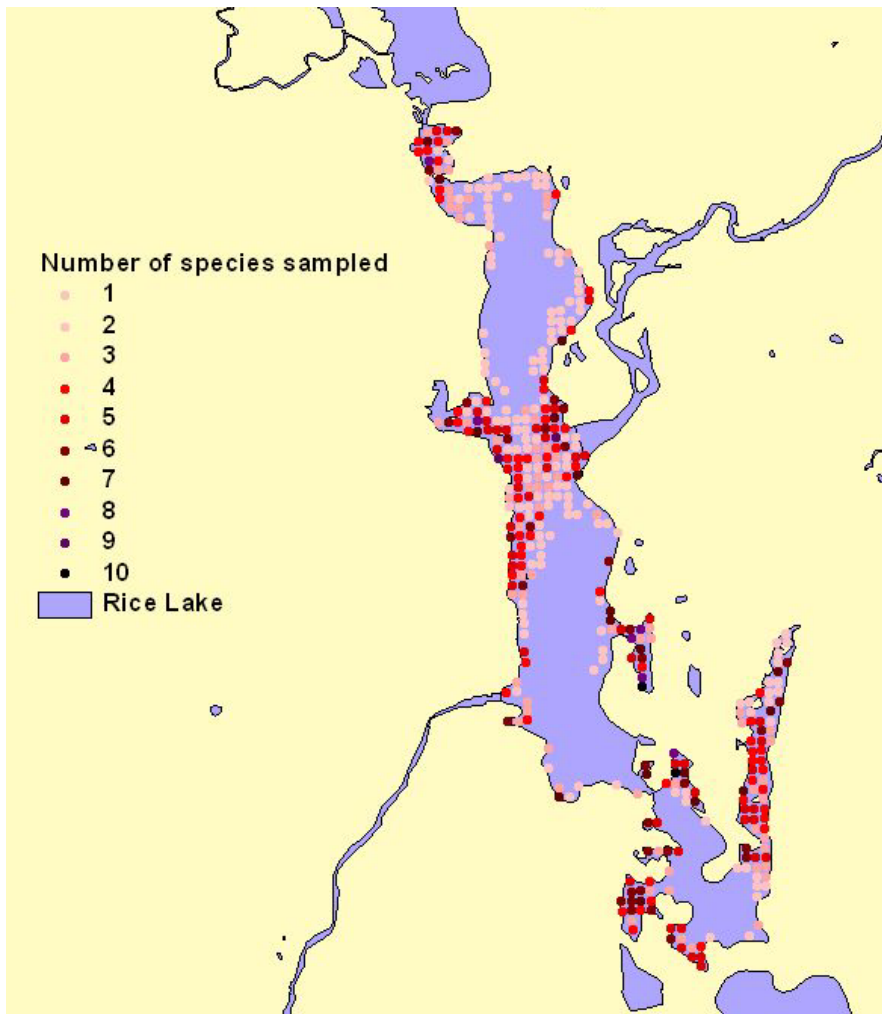


Figure 4: Map of species richness at sample points

Rice Lake has high plant diversity as demonstrated by the survey results. There were 41 species of macrophytes sampled during this survey. An additional 15 species were viewed within six feet of the surveyor but not sampled on the rake. This gives a total of 56 species either sampled or viewed. Of these 56 species, 54 are native species, 2 are non-natives, 4 are algae species and 52 are vascular plants. Curly leaf pondweed (*Potamogeton crispus*) and Aquatic for-get-me-not (*Myosotis scorpioides*) are the two non-native species sampled and viewed respectively. No endangered, threatened or species of concern were sampled or viewed in the survey.

The Simpson's diversity index is 0.89. This is quite high and demonstrates that it is very likely that two randomly sampled plants will be different species.

Species	Frequency of occurrence within vegetated areas (%)	Frequency of occurrence shallower than max depth of plants(%)	Relative Frequency (%)	Number of sites where species found	Average Rake Fullness
<i>Ceratophyllum demersum</i> ,Coontail	86.14	48.25	24.52	317	1.39
<i>Elodea canadensis</i> ,Common waterweed	44.84	25.11	12.76	165	1.10
<i>Potamogeton zosteriformis</i> ,Flat-stem pondweed	36.68	20.55	10.44	135	1.07
<i>Lemna trisulca</i> ,Forked duckweed	21.47	12.02	6.11	79	1.04
<i>Vallisneria americana</i> ,Wild celery	20.11	11.26	5.72	74	1.19
<i>Potamogeton robbinsii</i> ,Robbins pondweed	18.48	10.35	5.26	68	1.43
<i>Myriophyllum sibiricum</i> ,Northern water milfoil	16.58	9.28	4.72	61	1.02
Filamentous algae	14.67	8.22	4.18	54	1.15
<i>Potamogeton pusillus</i> ,Small pondweed	14.67	8.22	4.18	54	1.13
<i>Potamogeton crispus</i> ,Curly-leaf pondweed	12.77	7.15	3.63	47	1.00
<i>Potamogeton richardsonii</i> ,Clasping-leaf pondweed	8.70	4.87	2.47	32	1.00
<i>Lemna minor</i> ,Small duckweed	6.79	3.81	1.93	25	1.20
<i>Nymphaea odorata</i> ,White water lily	5.43	3.04	1.55	20	1.00
<i>Heteranthera dubia</i> ,Water star-grass	4.62	2.59	1.31	17	1.00
<i>Nuphar variegata</i> ,Spatterdock	4.08	2.28	1.16	15	1.00
<i>Potamogeton amplifolius</i> ,Large-leaf pondweed	4.08	2.28	1.16	15	1.00
<i>Najas flexilis</i> ,Bushy pondweed	3.26	1.83	0.93	12	1.08
<i>Potamogeton foliosus</i> ,Leafy pondweed	2.99	1.67	0.85	11	1.00
<i>Potamogeton friesii</i> ,Frie's pondweed	2.99	1.67	0.85	11	1.00
<i>Spirodela polyrhiza</i> ,Large Duckweed	2.99	1.67	0.85	11	1.00
<i>Nitella sp.</i> ,Nitella	2.72	1.52	0.77	10	1.00
<i>Wolffia columbiana</i> ,Common watermeal	2.45	1.37	0.70	9	1.00
<i>Megalodonta beckii</i> ,Water marigold	2.17	1.22	0.62	8	1.00
<i>Stuckenia pectinata</i> ,Sago pondweed	1.90	1.07	0.54	7	1.29
<i>Chara sp.</i> ,Muskgrasses	1.63	0.91	0.46	6	1.00
<i>Hydrodictyon sp.</i> , Waternet	1.63	0.91	0.46	6	1.00
<i>Potamogeton praelongis</i> ,White-stem pondweed	1.09	0.61	0.31	4	1.00
<i>Utricularia vulgaris</i> ,Common	1.09	0.61	0.31	4	1.00
<i>Brasenia schreberi</i> ,Watershield	0.54	0.30	0.15	2	1.00
<i>Elodea nuttallii</i> ,Slender waterweed	0.54	0.30	0.15	2	1.00
<i>Ranunculus aquatilis</i> ,Stiff water crowfoot	0.54	0.30	0.15	2	1.00
<i>Sagittaria sp.</i> (rosette)	0.54	0.30	0.15	2	1.00
Aquatic moss	0.27	0.15	0.08	1	1.00
<i>Najas gracillima</i> ,Northern naiad	0.27	0.15	0.08	1	1.00
<i>Potamogeton epiphydrus</i> ,Ribbon-leaf pondweed	0.27	0.15	0.08	1	1.00
<i>Potamogeton natans</i> ,Floating-leaf pondweed	0.27	0.15	0.08	1	1.00
<i>Sagittaria graminea</i> ,Grass-leaved arrowhead	0.27	0.15	0.08	1	1.00
<i>Schoenoplectus acutus</i> ,Hardstem bulrush	0.27	0.15	0.08	1	1.00
<i>Sparganium eurycarpum</i> ,Common bur-reed	0.27	0.15	0.08	1	1.00
<i>Utricularia gibba</i> ,Creeping bladderwort	0.27	0.15	0.08	1	1.00

Table 2: List of species and frequency data

Species Viewed	Sites Viewed
<i>Asclepias incarnata</i> , Swamp milkweed	1
<i>Calla palustris</i> , Wild calla	2
<i>Carex comosa</i> , bottle brush sedge	1
<i>Carex</i> sp.	1
<i>Comarum palustris</i> , Marsh cinquefoil	2
<i>Decodon verticillatus</i> , Swamp loosestrife	1
<i>Dulichium arundinaceum</i> , 3-way sedge	2
<i>Eleocharis palustris</i> , creeping spikerush	4
<i>Iris versicolor</i> , Northern Blue flag	1
<i>Juncus effusus</i> , Soft rush	1
<i>Myosotis scorpioides</i> , Aquatic for-get-me-not	1
<i>Pontederia cordata</i> , Pickerelweed	4
<i>Sagittaria latifolia</i> , Common arrowhead	1
<i>Schoenoplectus tabernaemontani</i> , Softstem bulrush	1
<i>Typha angustifolia</i> , Narrow-leaved cattail	2
<i>Typha latifolia</i> , Broad-leaved cattail	1

Table 3: List of species viewed only

The most frequently sampled plant on Rice Lake was coontail (*Ceratophyllum demersum*). This plant had a high frequency of occurrence at 85.14%. This may indicate high nutrients in Rice Lake as a high frequency of occurrence and high relative frequency of coontail shows its prevalence. A high relative abundance in coontail can be due to high nutrients since it has an ability to absorb large amounts of phosphorus from the water column (Borman, 1997). Coontail is a desirable plant with fine leaves providing good invertebrate and fish habitat. It also tends not to senesce in the winter months, providing key limited winter habitat. However, it can reach nuisance levels in some high nutrient lakes. Although it is very common in Rice Lake, and several points had a density of three, no areas seemed to be nuisance levels needing management.

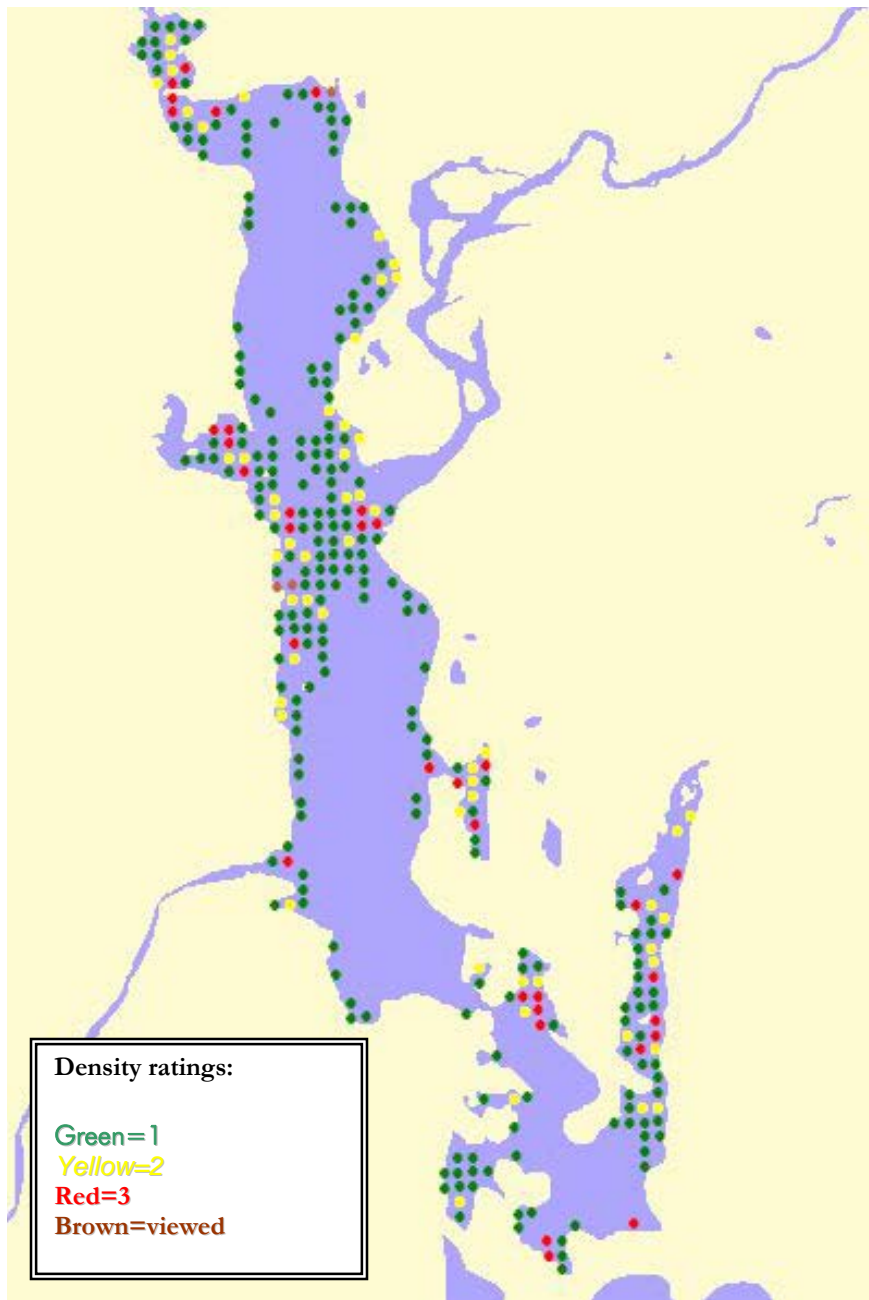


Figure 5: Map of *Certophyllum demersum* (coontail) distribution

Common waterweed (*Elodea Canadensis*) is the second most frequent plant in Rice Lake. This plant is also a desirable native in Wisconsin Lakes. It too can grow into fairly dense mats in high nutrient conditions but this was not apparent in Rice Lake. Common waterweed is good fish grazing areas and continues to photosynthesize in the winter months, adding oxygen to the water.

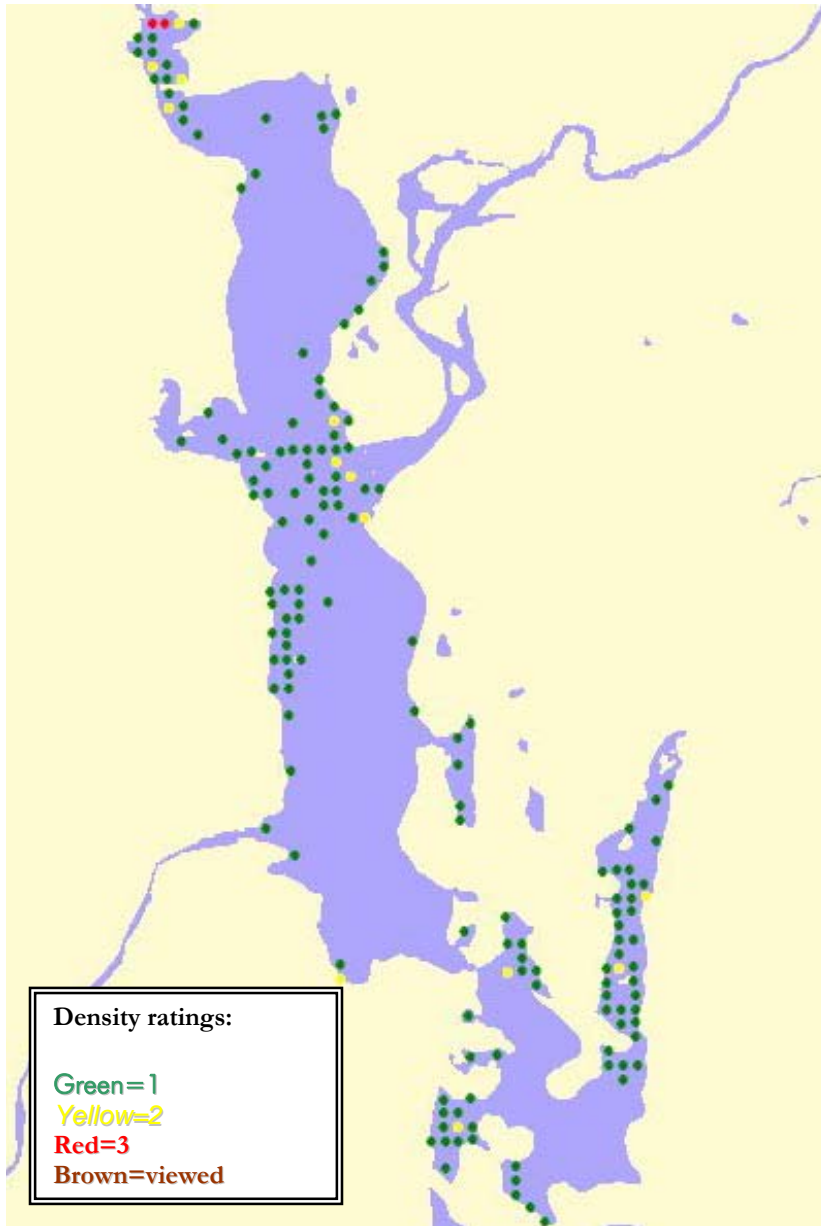


Figure 6: Map of *Elodea canadensis* (common waterweed) distribution

Another plant with high relative frequency was flat-stem pondweed (*Potamogeton zosteriformis*), being the third most frequent plant sampled. Flat-stem pondweed is good cover for fish and invertebrates. Flat-stem pondweed is also an important food source for waterfowl, muskrats, deer and beaver.

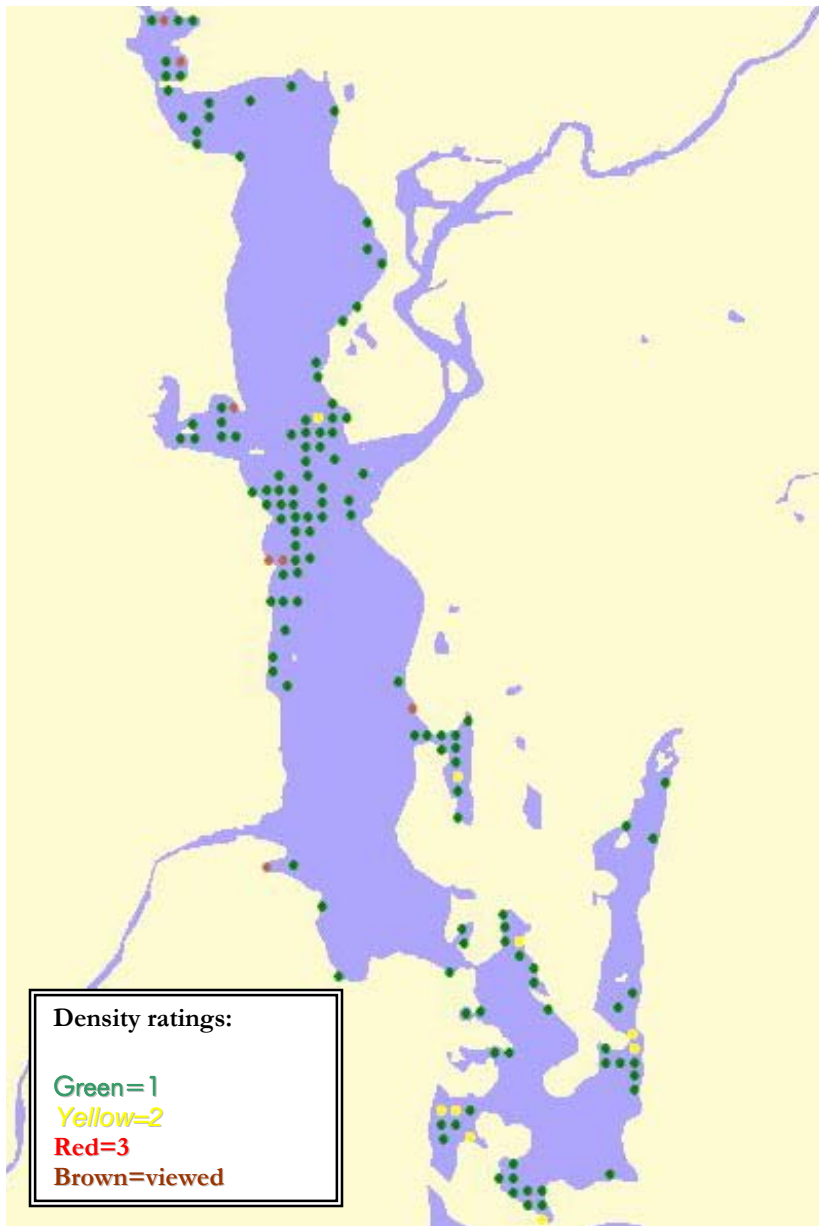


Figure 7: Map of *Potamogeton zosteriformis* (flat-stem pondweed) distribution

Floristic Quality Index

The Floristic Quality Index uses the plant species surveyed in and around a lake to indicate the lake's response to human development through habitat, sediment, and/or water quality changes. The FQI is based upon the number of plants sampled (that are used in the FQI) and the mean conservatism values. The greater the number of species and the greater the mean conservatism of the plants sampled the higher the FQI. A low FQI value can indicate habitat degradation, substrate changes and/or water quality changes that are adverse to sensitive plants. As these changes occur (largely due to human activity), these more sensitive plants become less prevalent and therefore are not sampled. FQI should be used with caution for evaluating water quality, especially in relation to excess nutrients. Excess nutrients will reduce water quality, but may not be reflected in the FQI.

FQI Species	Common name	Conservatism
<i>Brasenia schreberi</i>	Watershield	7
<i>Ceratophyllum demersum</i>	Coontail	3
<i>Calla palustris</i>	Wild calla	9
<i>Carex camosa</i>	Bottle brush sedge	5
<i>Chara sp.</i>	Muskgrasses	7
<i>Dulichium arundinaceum</i>	3-way sedge	9
<i>Elodea canadensis</i>	Common waterweed	3
<i>Elodea nuttallii</i>	Slender waterweed	7
<i>Lemna minor</i>	Small duckweed	5
<i>Lemna trisulca</i>	Forked Duckweed	6
<i>Megalodonta beckii</i>	Water marigold	8
<i>Myriophyllum sibiricum</i>	Northern water-milfoil	7
<i>Najas flexilis</i>	Bushy pondweed	6
<i>Najas gracillima</i>	Slender water-nymph	7
<i>Nitella sp.</i>	Nitella	7
<i>Nuphar variegata</i>	Spatterdock	6
<i>Nymphaea odorata</i>	White water lily	6
<i>Pontaderia cordata</i>	Pickernelweed	9
<i>Potamogeton amplifolius</i>	Large-leaf pondweed	7
<i>Potamogeton epihydrus</i>	Ribbon-leaf pondweed	8
<i>Potamogeton foliosus</i>	Leafy pondweed	6
<i>Potamogeton friesii</i>	Frie's pondweed	8
<i>Potamogeton natans</i>	Floating-leaf	5
<i>Potamogeton praelongis</i>	White-stem pondweed	8
<i>Potamogeton pusillus</i>	Small pondweed	7
<i>Potamogeton richardsonii</i>	Clasping-leaf pondweed	5
<i>Potamogeton robbinsii</i>	Robbins pondweed	8
<i>Potamogeton zosteriformis</i>	Flat-stem pondweed	6

FBI species continued		
<i>Ranunculus aquatilis</i>	Stiff water crowfoot	7
<i>Sagittaria graminea</i>	Grass-leaved arrowhead	9
<i>Sagittaria latifolia</i>	Common arrowhead	3
<i>Schoenoplectus acutus</i>	Hardstem bulrush	5
<i>Schoenoplectus tabernaemontani</i>	Softstem bulrush	4
<i>Sparganium eurycarpum</i>	Common bur-reed	5
<i>Spirodela polyrhiza</i>	Large Duckweed	5
<i>Stuckenia pectinata</i>	Sogo pondweed	3
<i>Typha angustifolium</i>	Narrow-leaved cattail	1
<i>Typha latifolia</i>	Broad-leaved cattail	1
<i>Utricularia gibba</i>	Creeping bladderwort	9
<i>Utricularia vulgaris</i>	Common bladderwort	7
<i>Vallisneria americana</i>	Wild celery	6
<i>Wolffia columbiana</i>	Common watermeal	5
<i>Heteranthera dubia</i>	Water star-grass	6

Table 4: FQI species list with conservatism values

In calculating the FQI, 43 species were used with a mean conservatism value of 6.07. These values resulted in a FQI of 39.8¹. When compared to the median FQI values obtained from lakes researched in the same eco-region in 1999 (Nichols, 1999), Rice Lake is higher in two of three values. The median number of species sampled (used in FQI) for this eco-region is 23.5 compared to 36 for Rice Lake. The median mean conservatism value for the eco-region lakes is 6.2 and is slightly lower for Rice Lake at 6.07. Lastly, the median FQI for lakes in the eco-region is 28.3 and Rice Lake is higher at 39.8. The larger plant diversity accounts for the higher FQI in Rice Lake compared to the eco-region lakes.

FQI Values	Rice Lake	Eco-region median
Number of species	43	23.5
Mean Conservatism	6.07	6.2
FQI	39.8	28.3

Table 5 : FQI values and eco-region median

Non-native and aquatic invasive species

One non-native species, Aquatic for-get-me-not was viewed. The Aquatic-for-get-me-not was viewed near the shoreline at one sample point. This plant is not frequent on Rice Lake and should not be considered a major threat. However, this plant should be monitored.

The other non-native species was curly leaf pondweed (CLP) and should be considered invasive. The CLP grows very dense and is expansive on Rice Lake. There were several

¹ A spreadsheet developed by the Wisconsin Department of Natural Resources was used to enter and calculate the FQI.

beds (totaling 12.1 acres) that had an average rake density of less than 2. There is an extremely large coverage (199.26 acres) of CLP beds with a mean rake density greater than two. This coverage encompasses a very large portion of the lake with CLP plants reaching the surface and reaching nuisance levels in many areas.

CLP grows best in the colder water of spring and early summer, undergoing senescence by early to mid July. CLP was still sampled at numerous locations in late July.

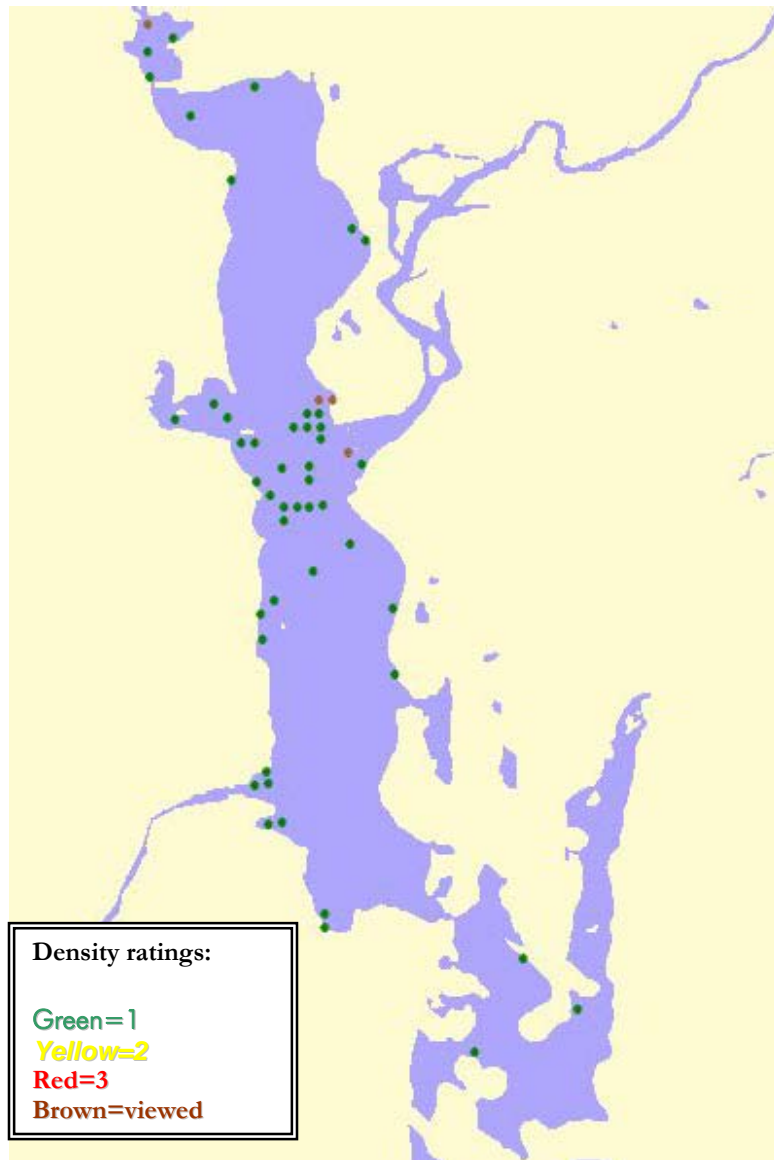
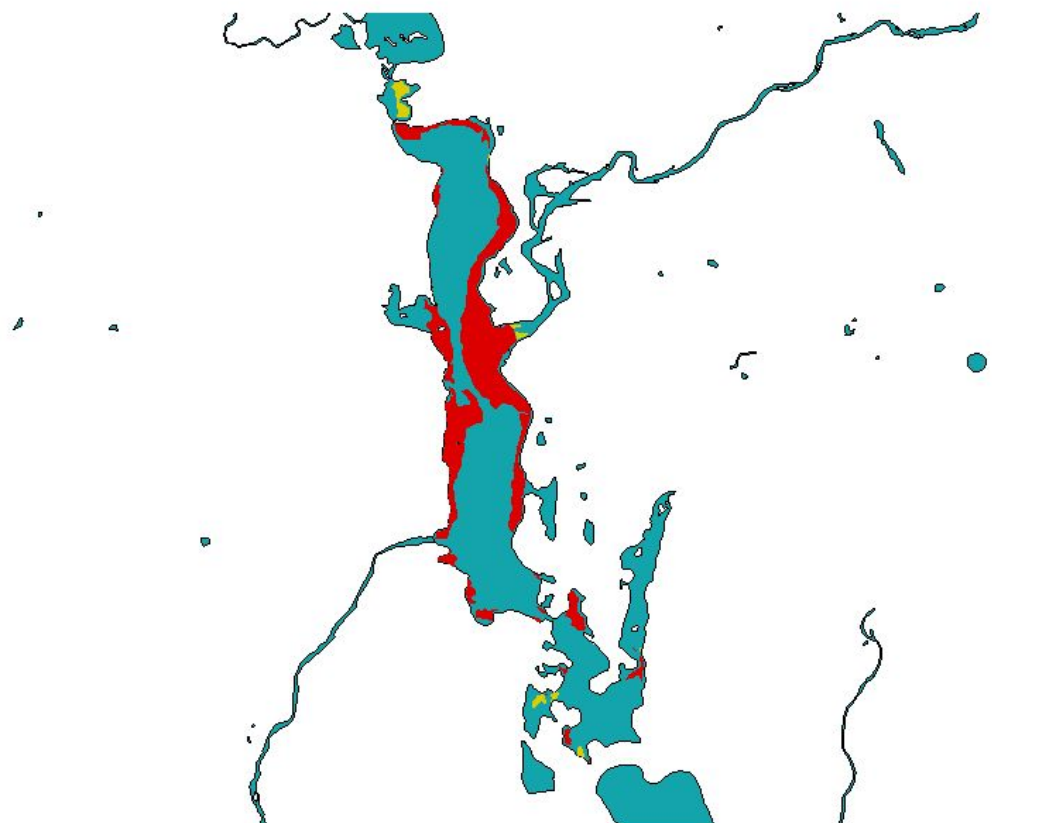


Figure 8: Map of CLP distribution from July survey 2008

Rice Lake CLP Bed Map



CLP Beds-Density 2 or greater/near or at surface



CLP Beds-Density <2/ not at or near surface

Figure 9: Map of CLP beds in June 2008

Recommendations

Rice Lake has a very diverse, healthy plant community. Fish and key organisms such as invertebrates rely on native plants for survival. In addition, excess nutrients can be a concern in impoundment lakes such as Rice Lake. As a result, the plant community can help maintain water quality in Rice Lake through assimilation of excess nutrients that would otherwise be available for nuisance algae growth. It is important that the native plant community be preserved and monitored periodically in the future.

The non-native plant curly leaf pondweed needs to be managed. It is growing to nuisance levels in Rice Lake. It is probable that it is affecting early season growth of native plants due to the density of the CLP growth through June. In addition, it could also be adding a large phosphorus load to the lake when senescence occurs in July. If reduction can be successful, native plants may replace the CLP growth and reduce excess nutrients and reduce sudden habitat losses in the middle of summer. Management practices must be used that will target CLP and have limited affect on the native plants.

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Appendix B

Glossary

Community-Different populations interacting.

Ecosystem-Any complex of living organisms together with all biotic and abiotic (non-living) factors which affect them.

Emergent plant-Aquatic plants that are rooted or anchored in sediment and have stems and leaves extending well above the water surface.

Floating-leafed plant-Plants with leaves floating on the water surface and are rooted or attached to sediments by long, flexible stems.

Habitat-The physical place where an organism lives.

Herbarium-A collection of plants sampled.

Littoral zone-The region of a body of water extending from the shoreline outward to the greatest depth occupied by rooted aquatic plants.

Macrophyte-Large, rooted or floating aquatic plants that may bear flowers and seeds. Some plants are free floating and are not attached to the bottom.

Nutrient-Any chemical element, ion or compound required by an organism for the continuation of growth, reproduction, and other life processes.

Photosynthesis-Production of organic matter (carbohydrate) from inorganic carbon and water in the presence of light.

Sediment-Solid material deposited in the bottom of a basin.

Submergent plant-Aquatic plant that grows with all or most of its stems and leaves below the water surface.

Voucher-A collection of specimens sampled in a particular location.

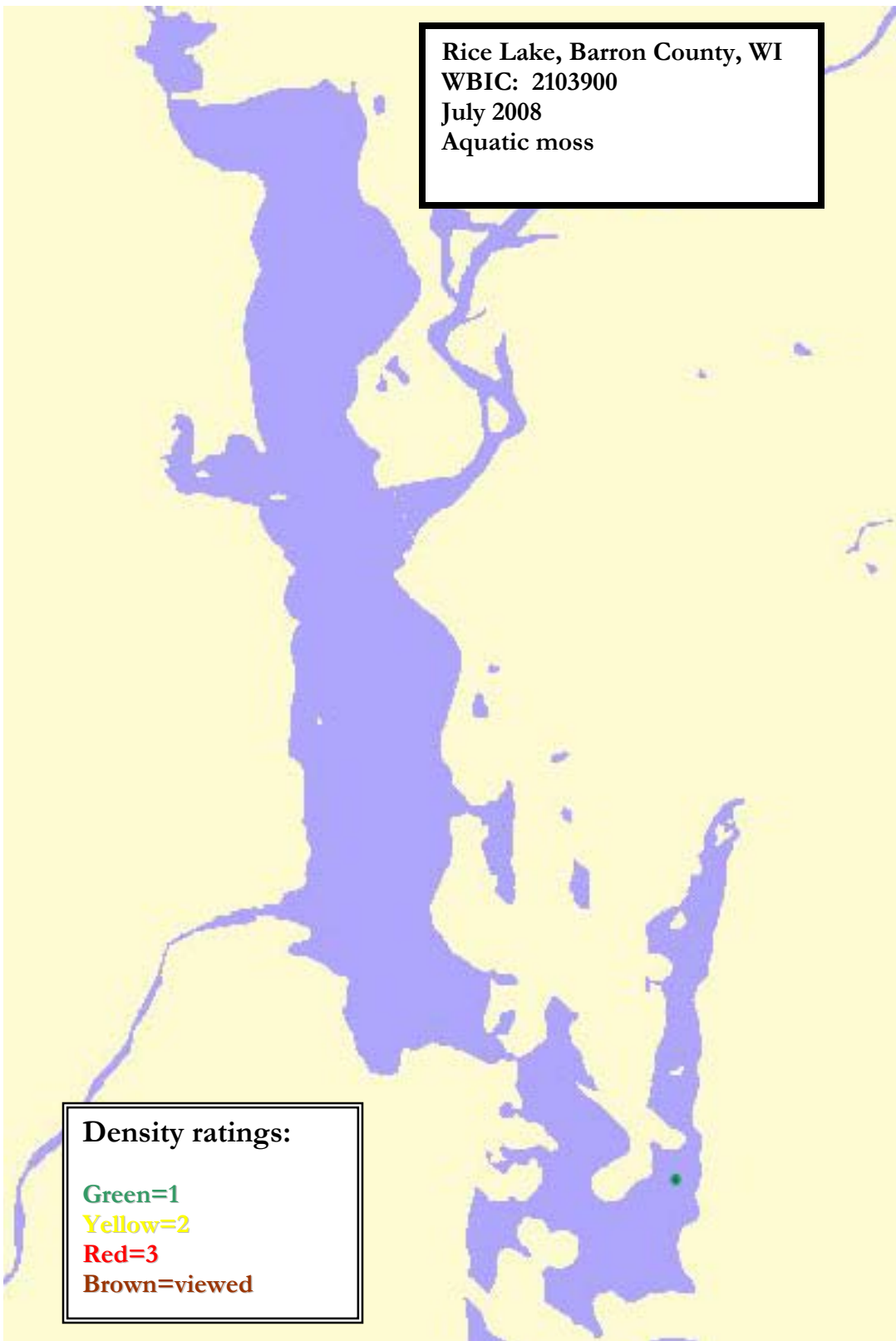
Watershed-The entire surface landscape that contributes water to a lake or river.

Appendix A-Maps of species and locations

Species occur in order listed below

Aquatic moss
Asclepias incarnata, Swamp milkweed
Brasenia schreberi, Watershield
Calla palustris, Wild calla
Carex comosa, bottle brush sedge
Carex sp.
Ceratophyllum demersum, Coontail
Chara, Muskgrasses
Comarum palustris, Marsh cinquefoil
Decodon verticillatus, Swamp loosestrife
Dulichium arundinaceum, 3-way sedge
Eleocharis palustris, creeping spikerush
Elodea canadensis, Common waterweed
Elodea nuttallii, Slender waterweed
Filamentous algae
Heteranthera dubia, Water star-grass
Hydrodictyon sp., Waternet
Iris versicolor, Northern Blue flag
Juncus effusus, Soft rush
Lemna minor, Small duckweed
Lemna trisulca, Forked duckweed
Megalodonta beckii, Water marigold
Myosotis scorpioides, Aquatic for-get-me-not
Myriophyllum sibiricum, Northern water milfoil
Najas flexilis, Bushy pondweed
Najas gracillima, Northern naiad
Nitella sp., Nitella
Nuphar variegata, Spatterdock
Nymphaea odorata, White water lily
Pontederia cordata, Pickerelweed
Potamogeton amplifolius, Large-leaf pondweed
Potamogeton crispus, Curly-leaf pondweed
Potamogeton epihydrus, Ribbon-leaf pondweed
Potamogeton foliosus, Leafy pondweed
Potamogeton friesii, Frie's pondweed
Potamogeton natans, Floating-leaf pondweed
Potamogeton praelongis, White-stem pondweed
Potamogeton pusillus, Small pondweed
Potamogeton richardsonii, Claspingleaf pondweed
Potamogeton robbinsii, Robbins pondweed
Potamogeton zosteriformis, Flat-stem pondweed
Ranunculus aquatilis, Stiff water crowfoot
Sagittaria graminea, Grass-leaved arrowhead
Sagittaria latifolia, Common arrowhead
Sagittaria sp. (rosette)
Schoenoplectus acutus, Hardstem bulrush
Schoenoplectus tabernaemontani, Softstem bulrush
Sparganium eurycarpum, Common bur-reed
Spirodela polyrhiza, Large Duckweed
Stuckenia pectinata, Sago pondweed
Typha angustifolia, Narrow-leaved cattail
Typha latifolia, Broad-leaved cattail
Utricularia gibba, Creeping bladderwort
Utricularia vulgaris, Common
Vallisneria americana, Wild celery
Wolffia columbiana, Common watermeal

Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Aquatic moss



Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed

Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Brasenia schreberi
Watershield

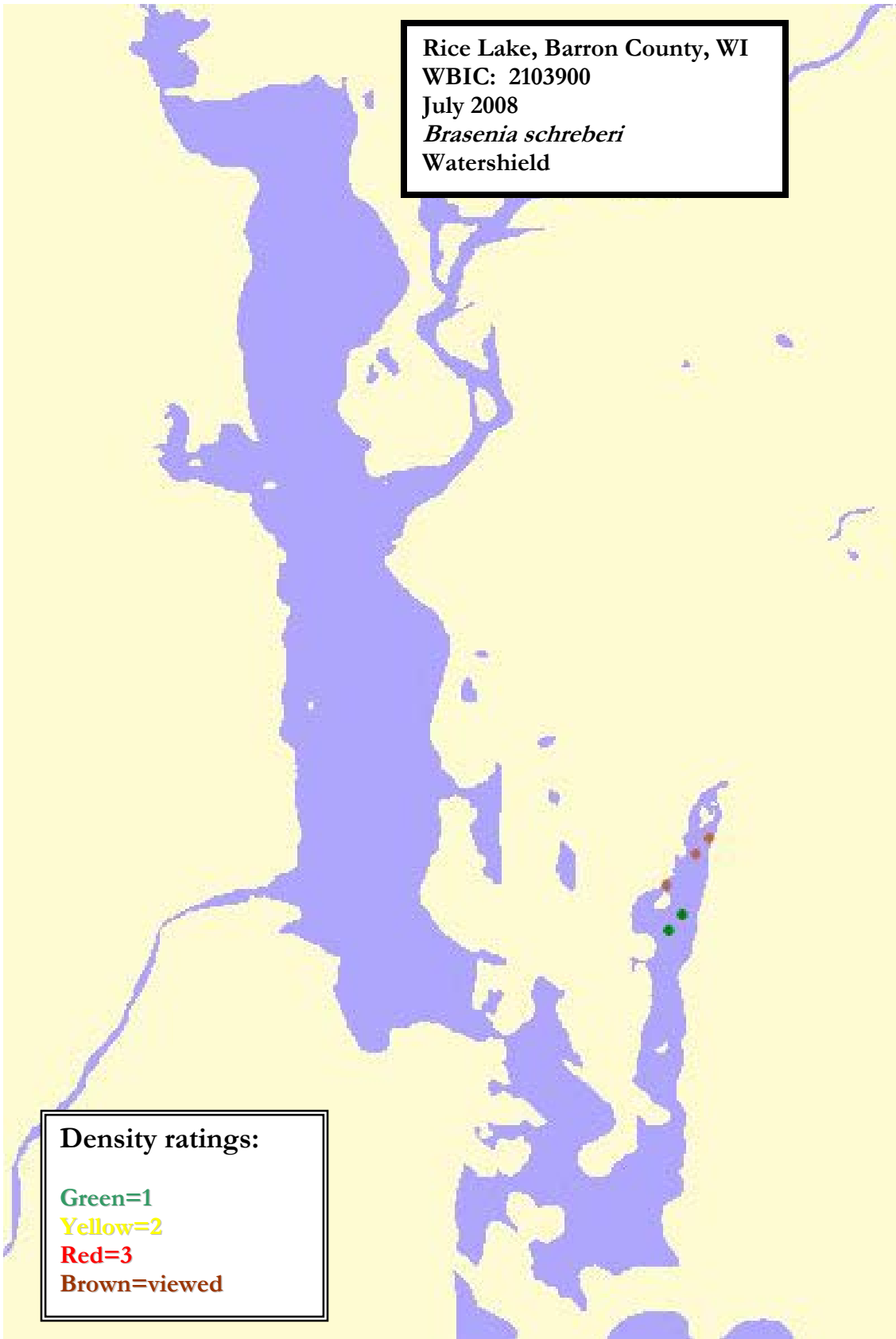
Density ratings:

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Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
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July 2008
Calla palustris
Wild calla

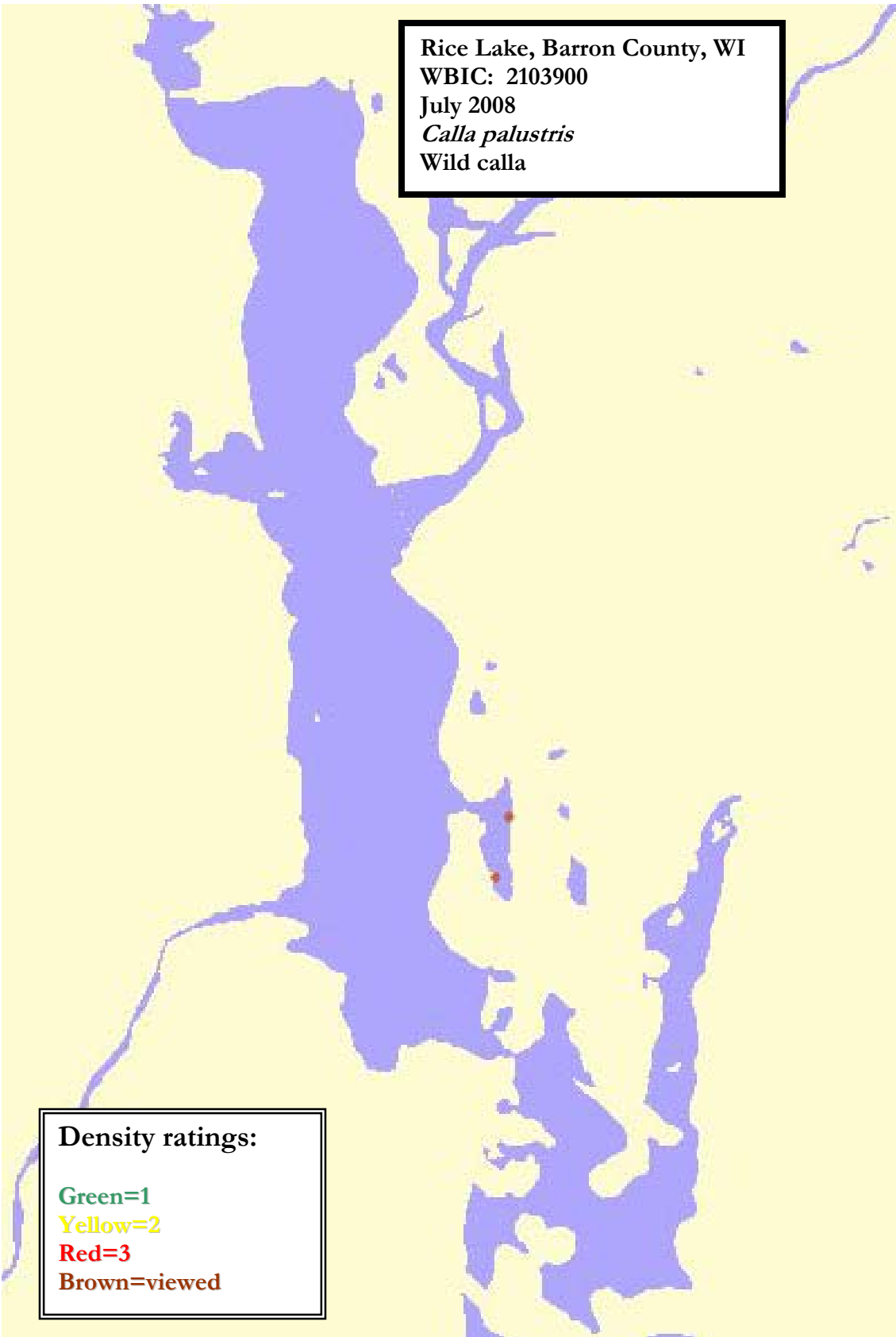
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Yellow=2

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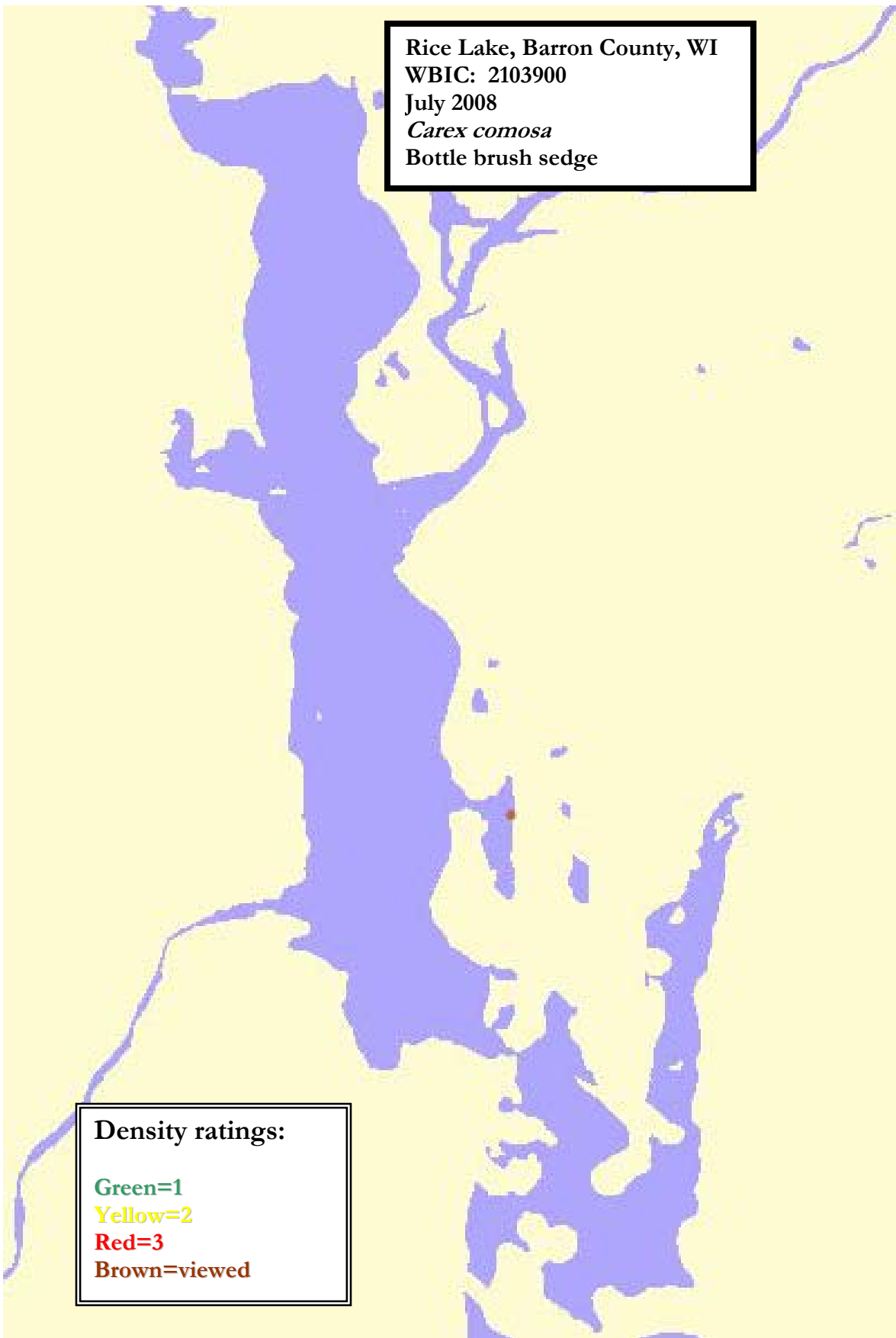
Brown=viewed



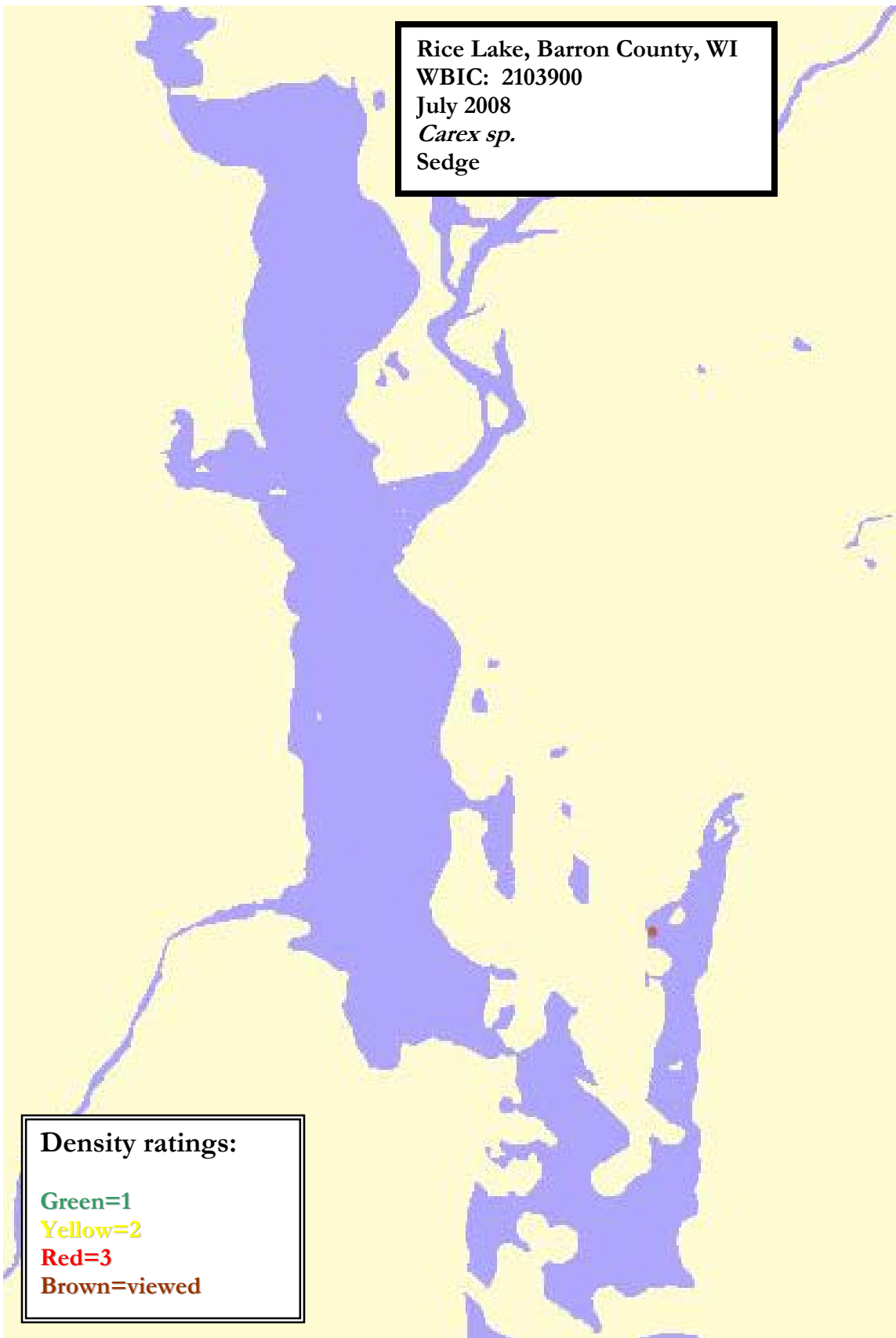
Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Carex comosa
Bottle brush sedge

Density ratings:

Green=1
Yellow=2
Red=3
Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Carex sp.
Sedge



Density ratings:

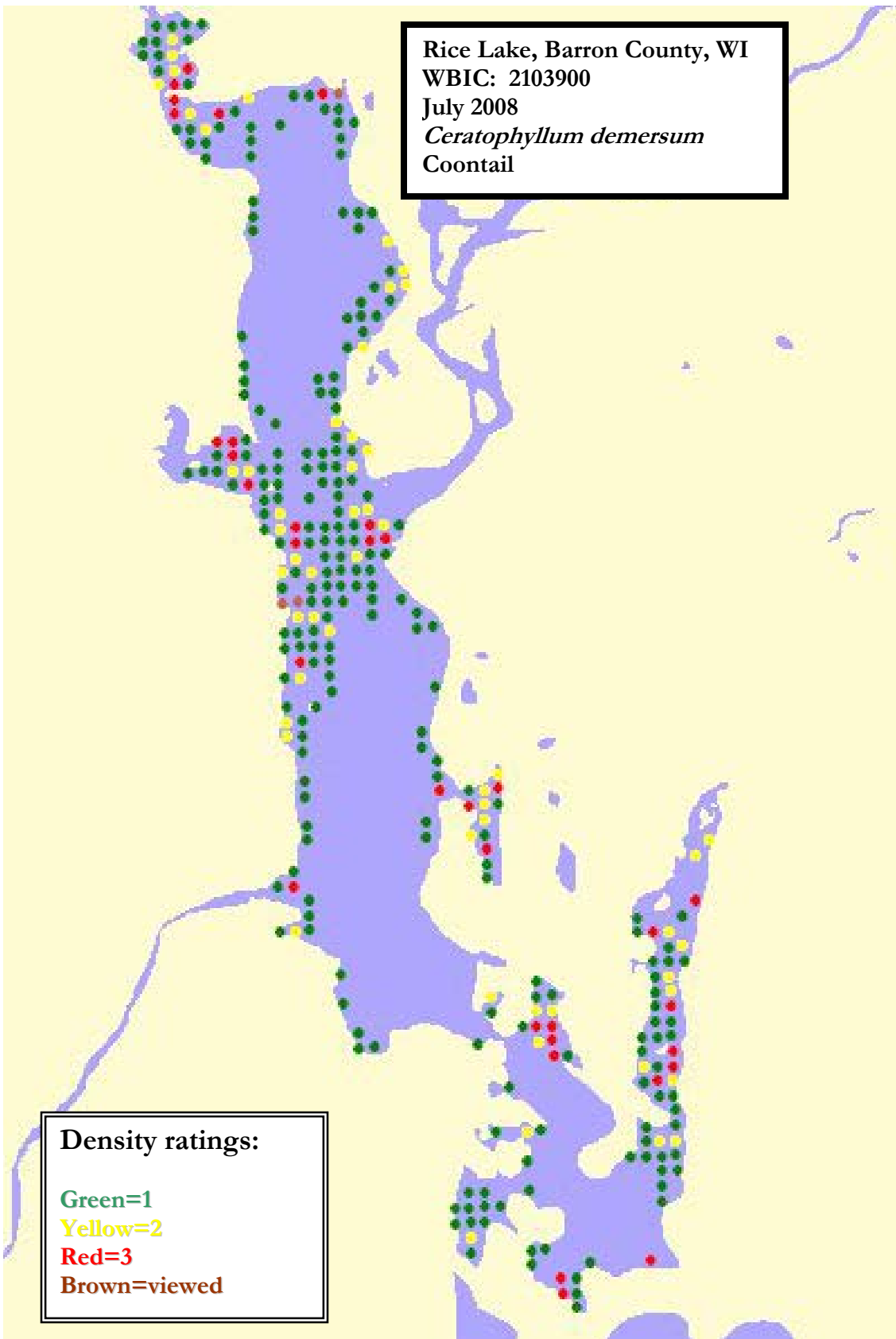
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Yellow=2

Red=3

Brown=viewed

Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Ceratophyllum demersum
Coontail



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Chara sp.
Muskgrass



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Comarum palustris
Marsh cinquefoil

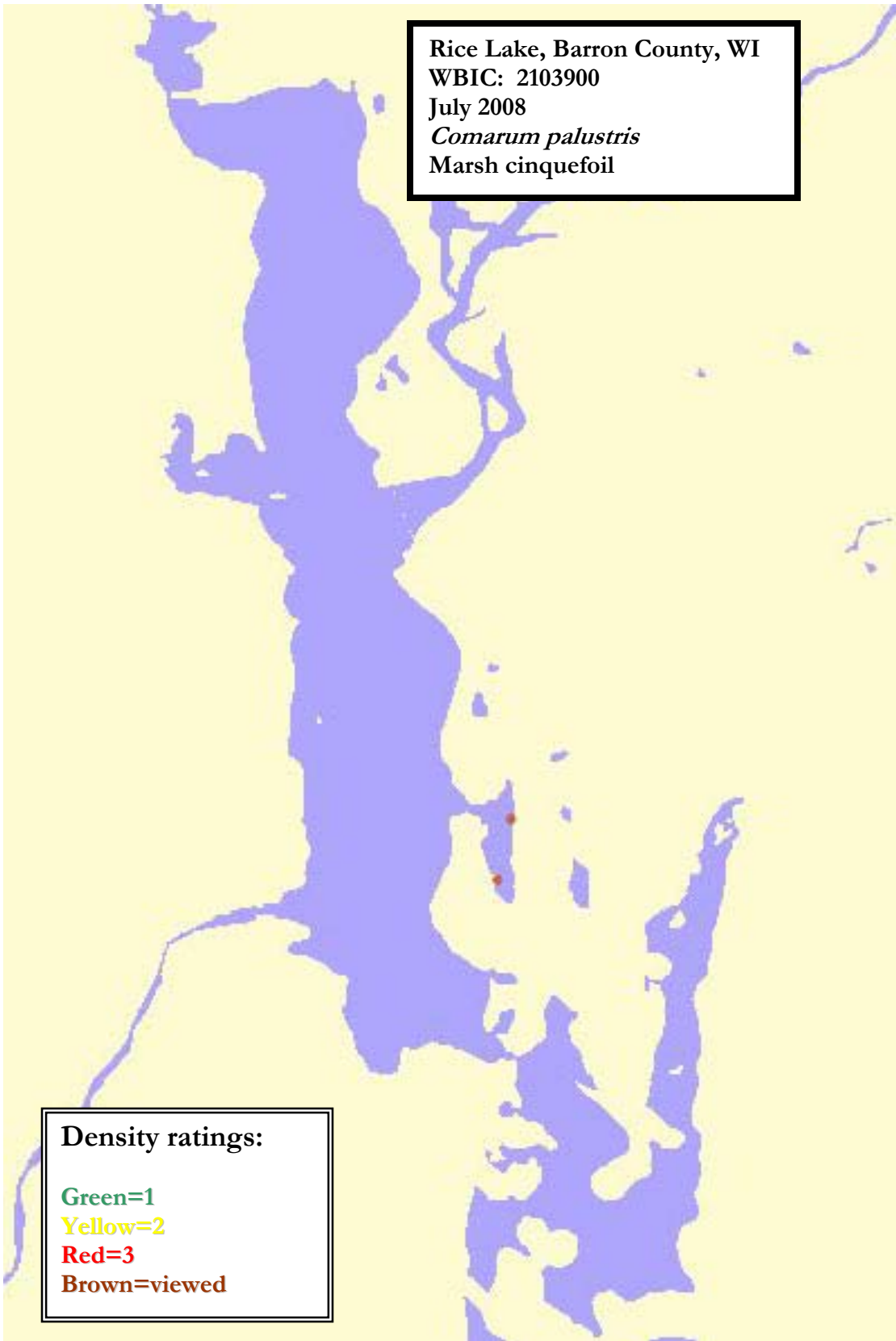
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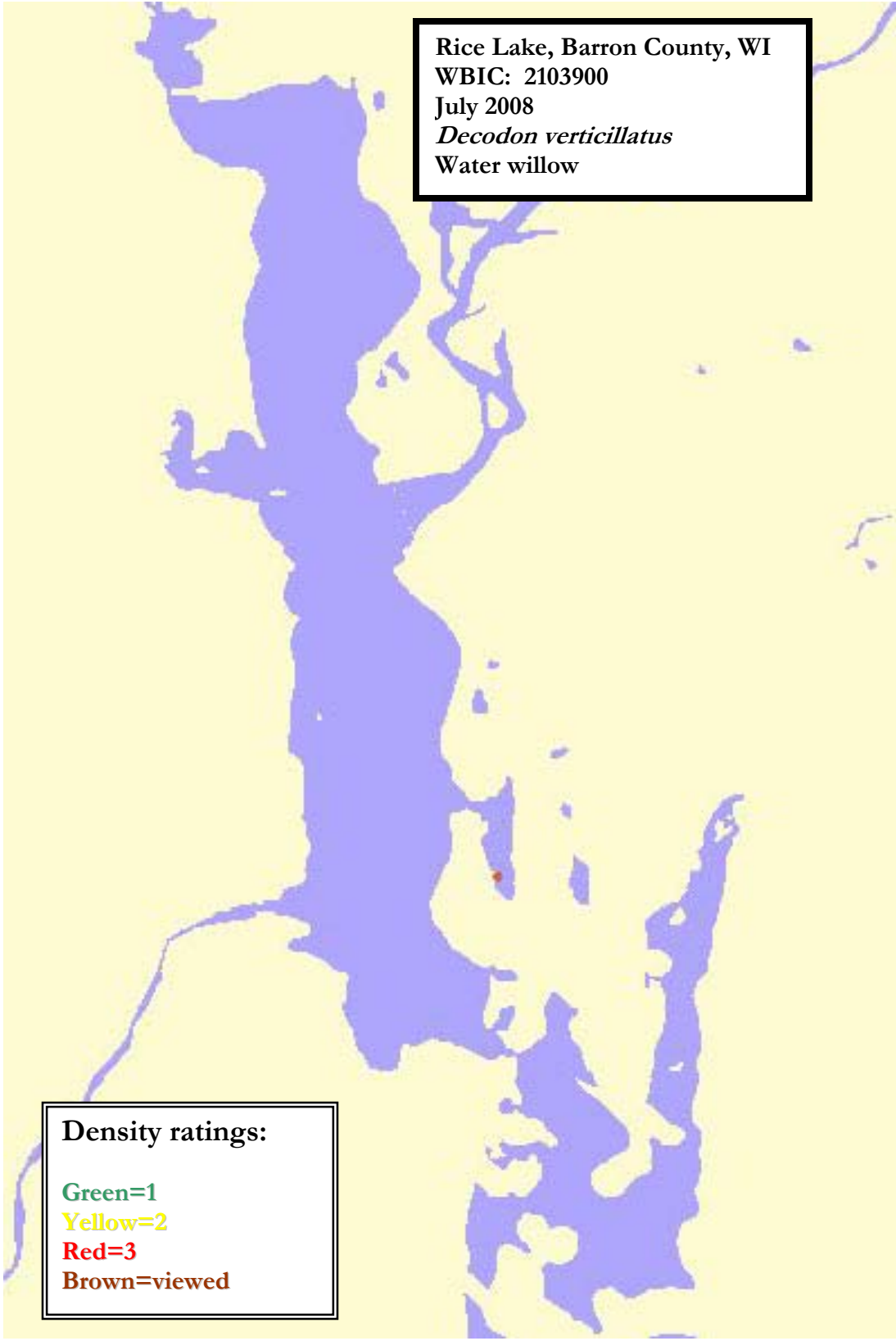
Green=1

Yellow=2

Red=3

Brown=viewed





Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Decodon verticillatus
Water willow

Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed

Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Dulichium arundinaceum
3-way sedge

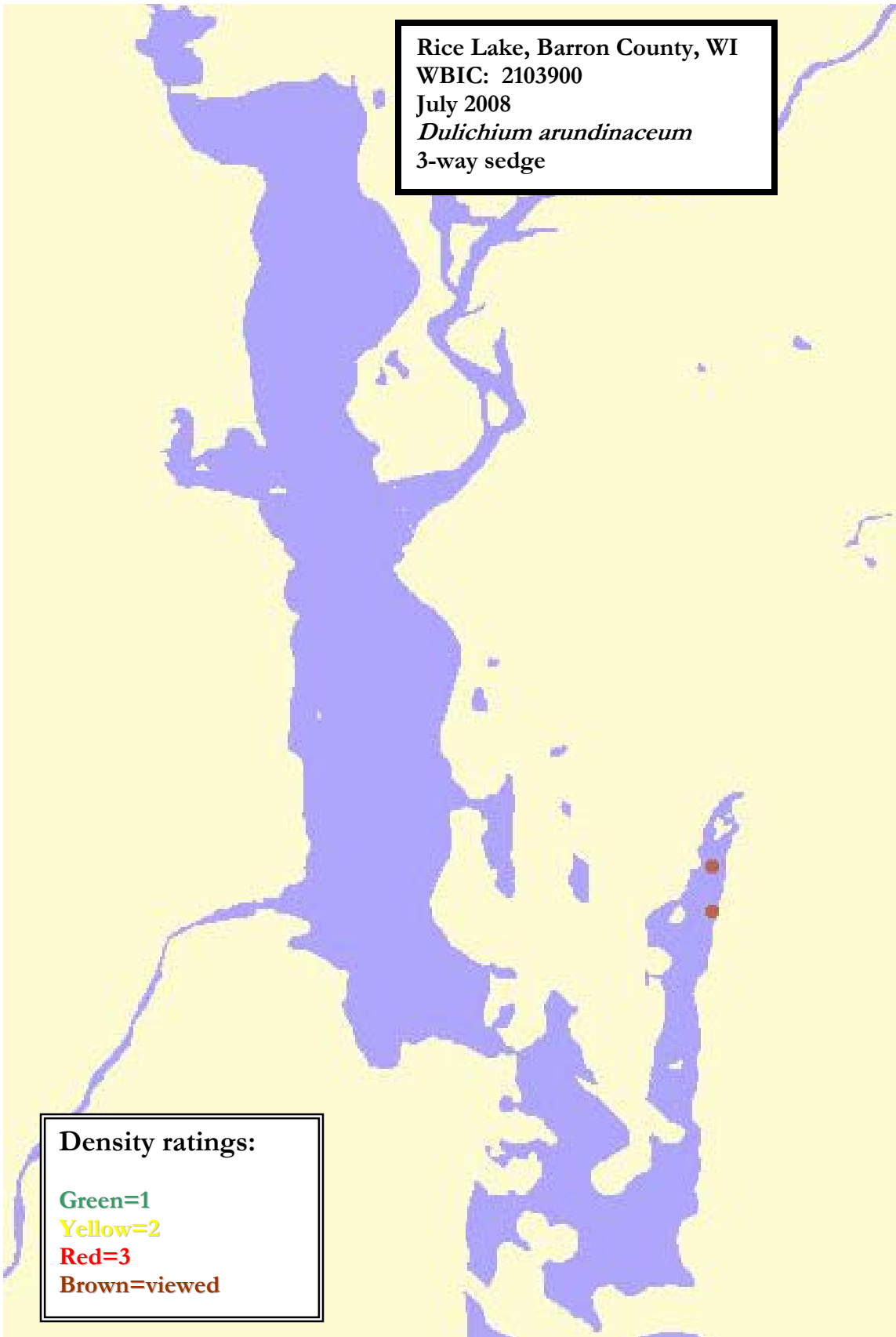
Density ratings:

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Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Eleocharis palustris
Creeping spikerush

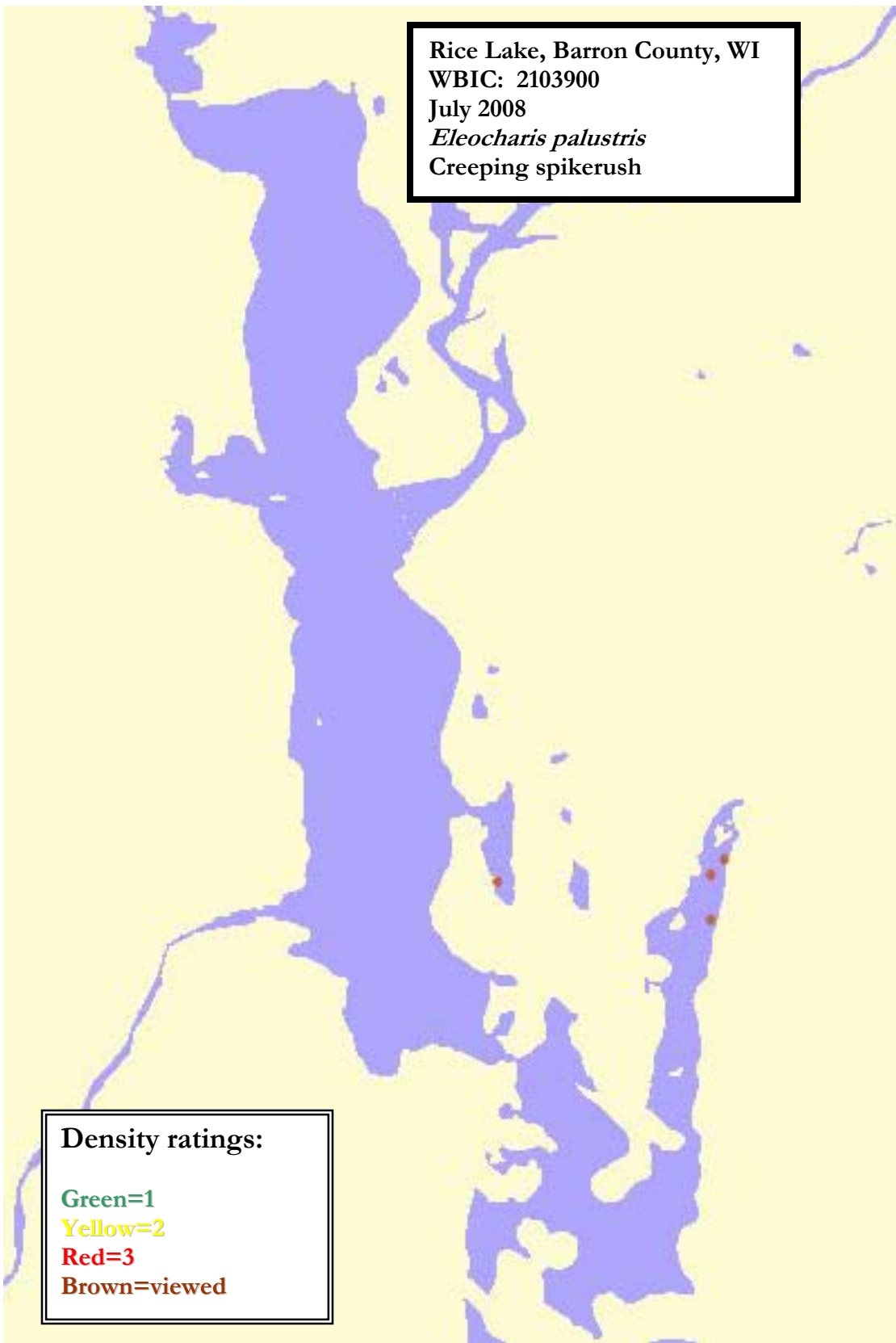
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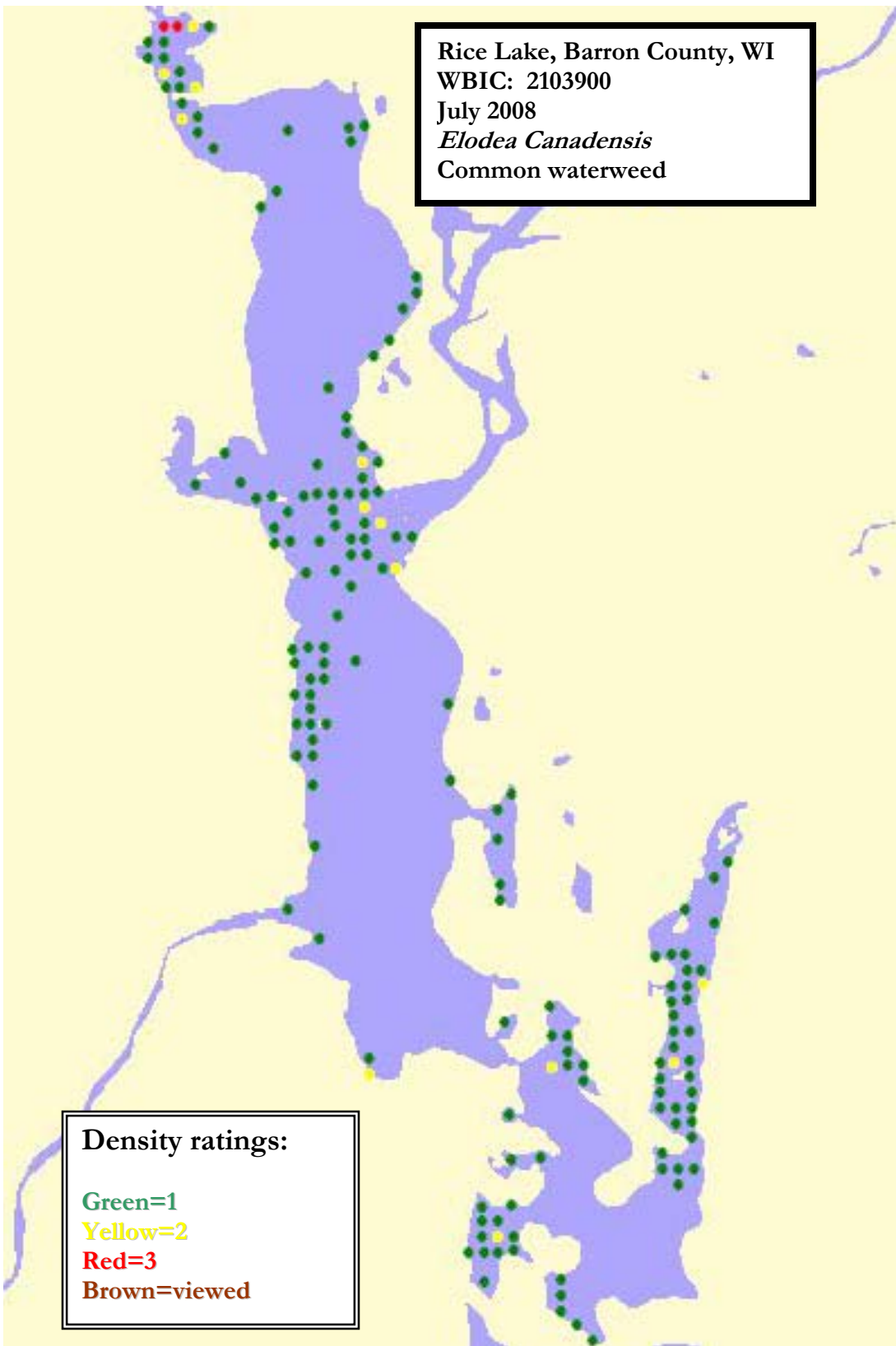
Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Elodea Canadensis
Common waterweed



Density ratings:
Green=1
Yellow=2
Red=3
Brown=viewed

Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Elodea nuttallii
Slender waterweed

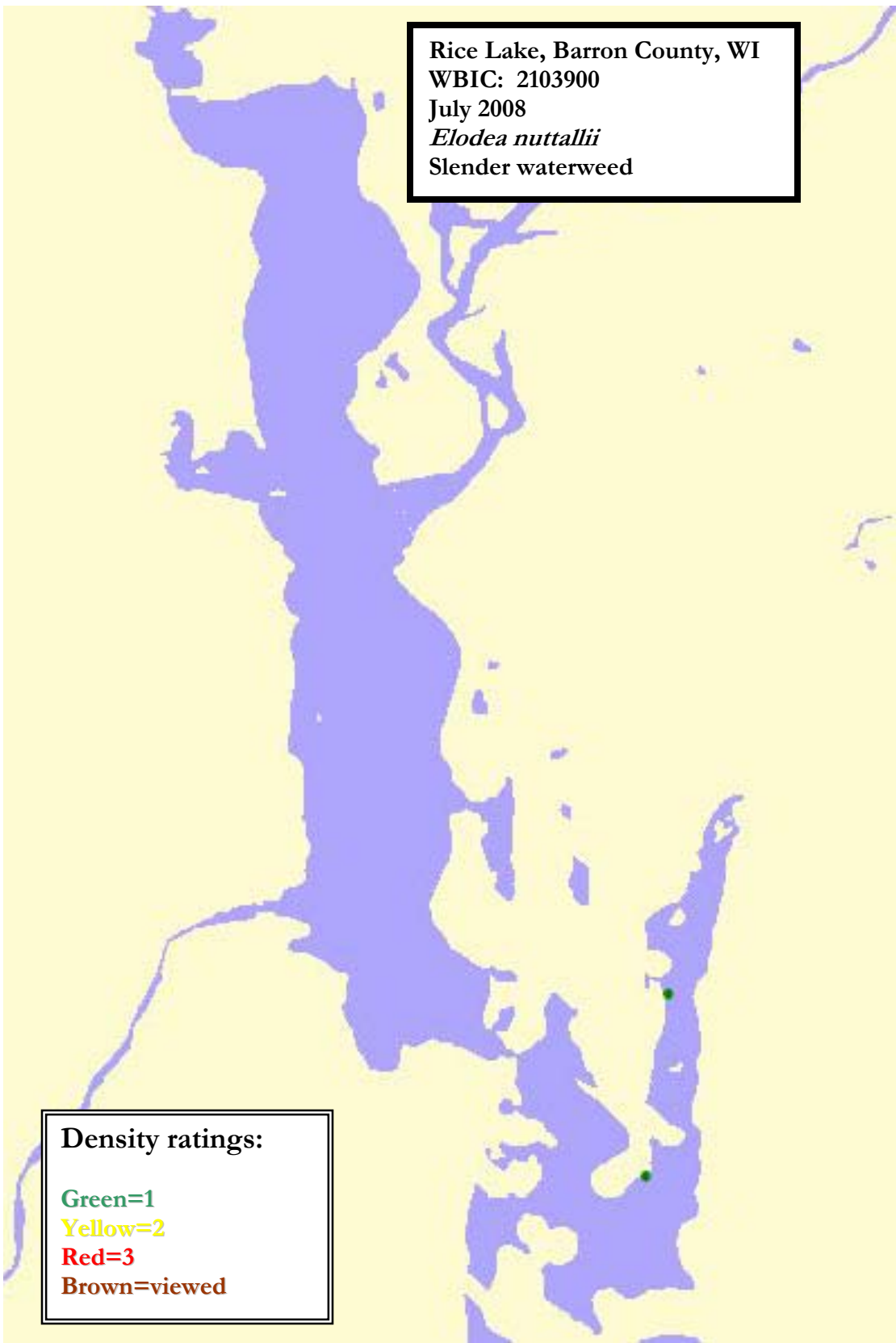
Density ratings:

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Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Filamentous algae

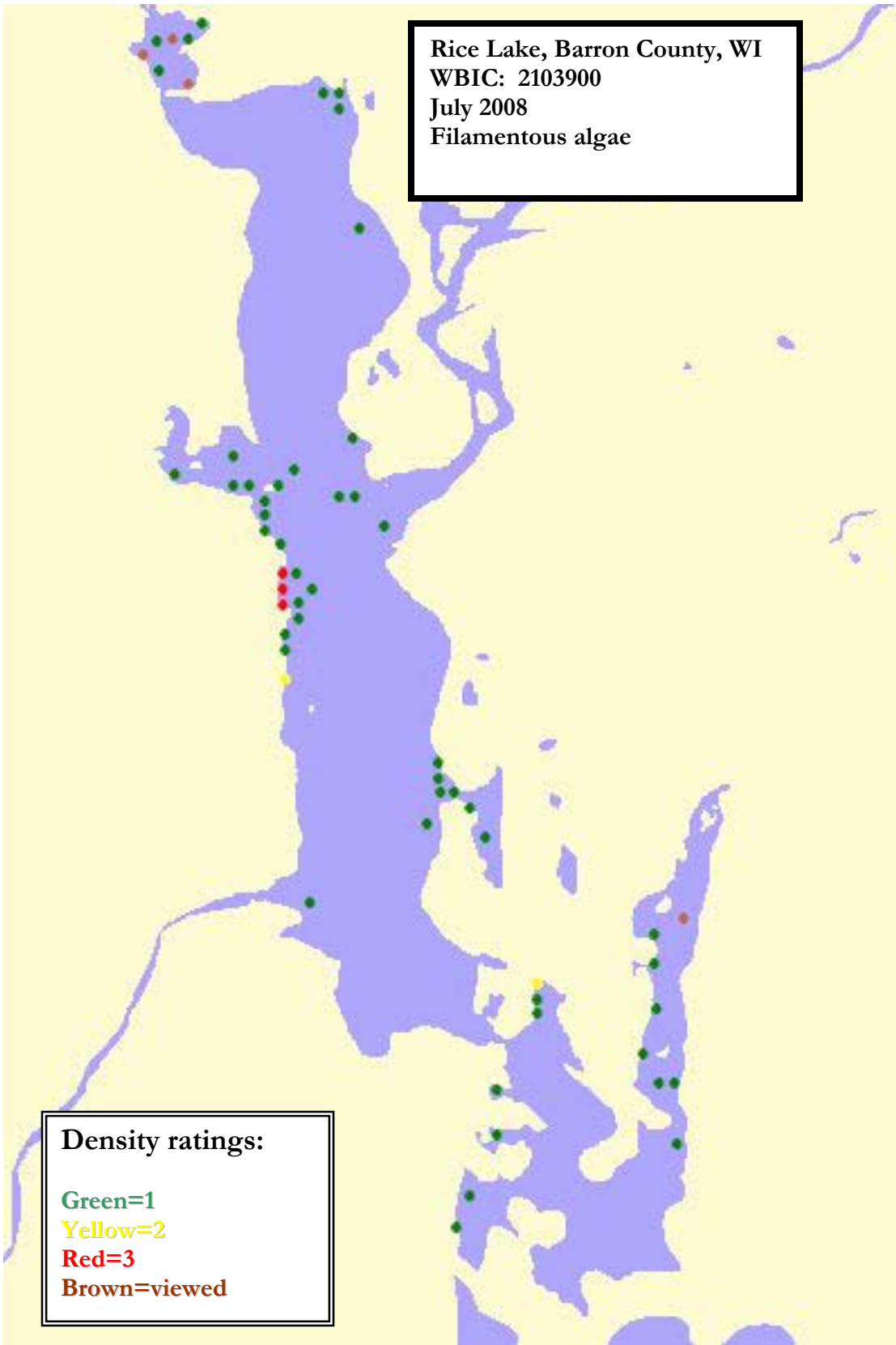
Density ratings:

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Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Heteranthera dubia
Water stargrass

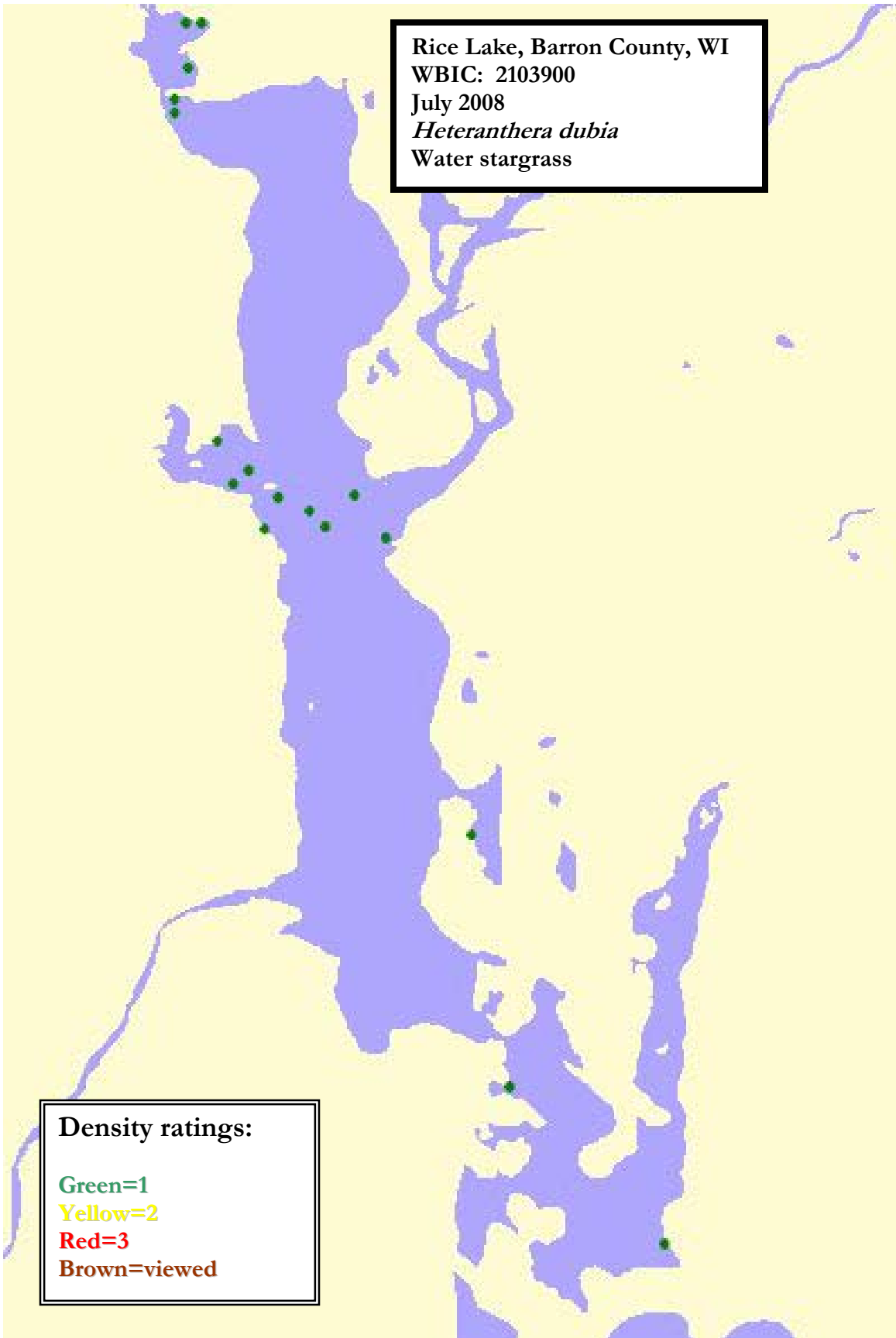
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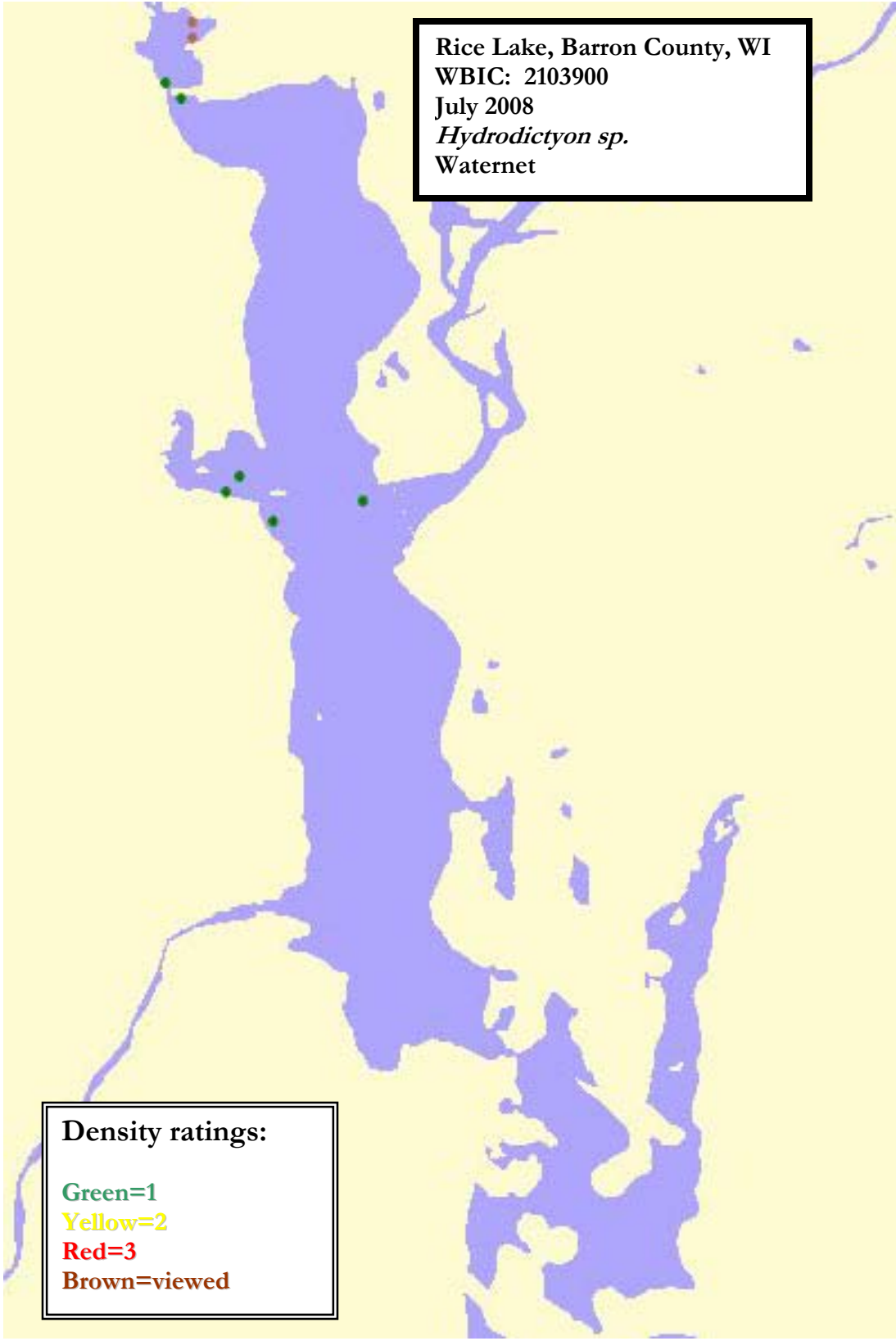
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Yellow=2

Red=3

Brown=viewed





Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Hydrodictyon sp.
Waternet

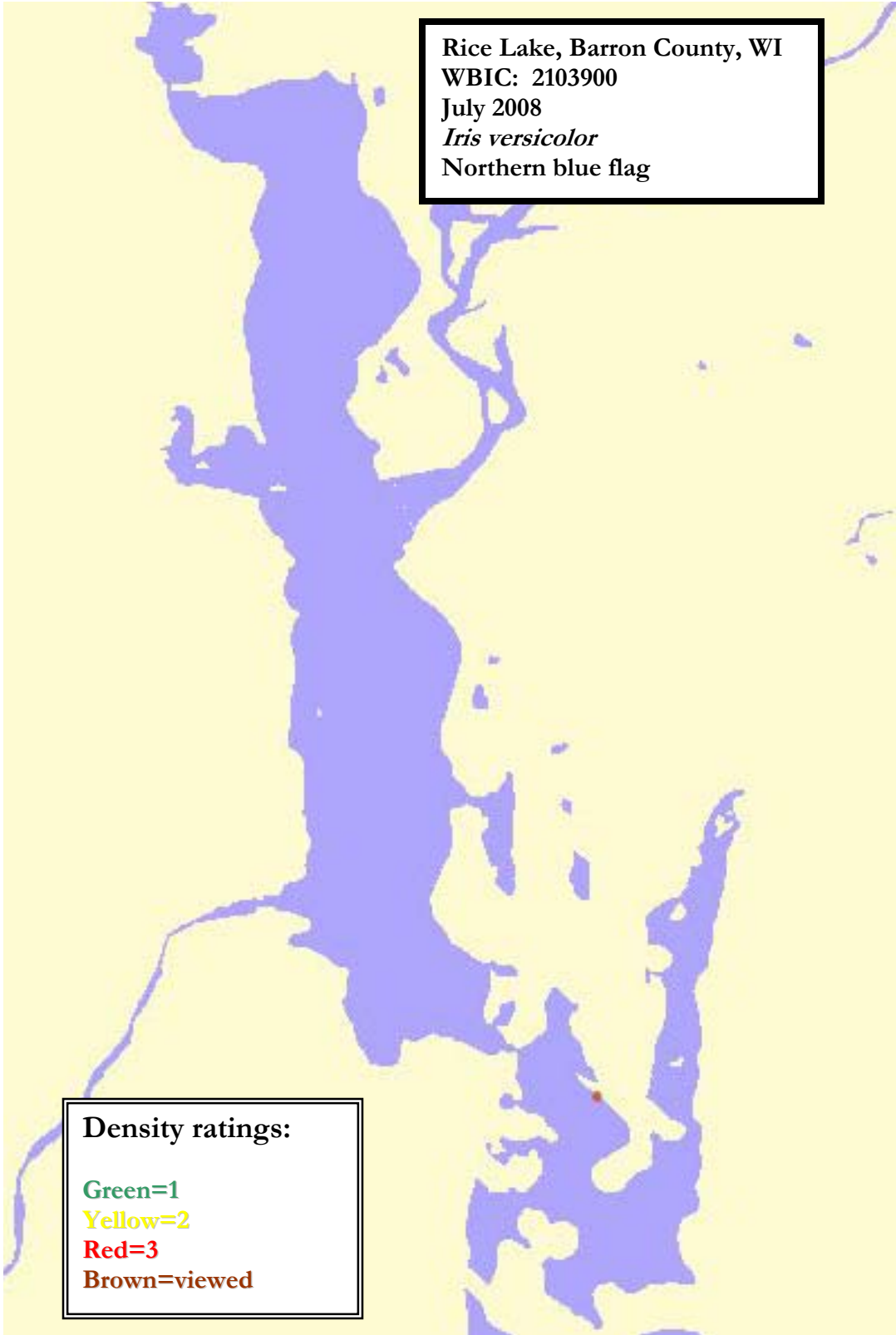
Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Iris versicolor
Northern blue flag

Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed

Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Juncus effusus
Soft rush

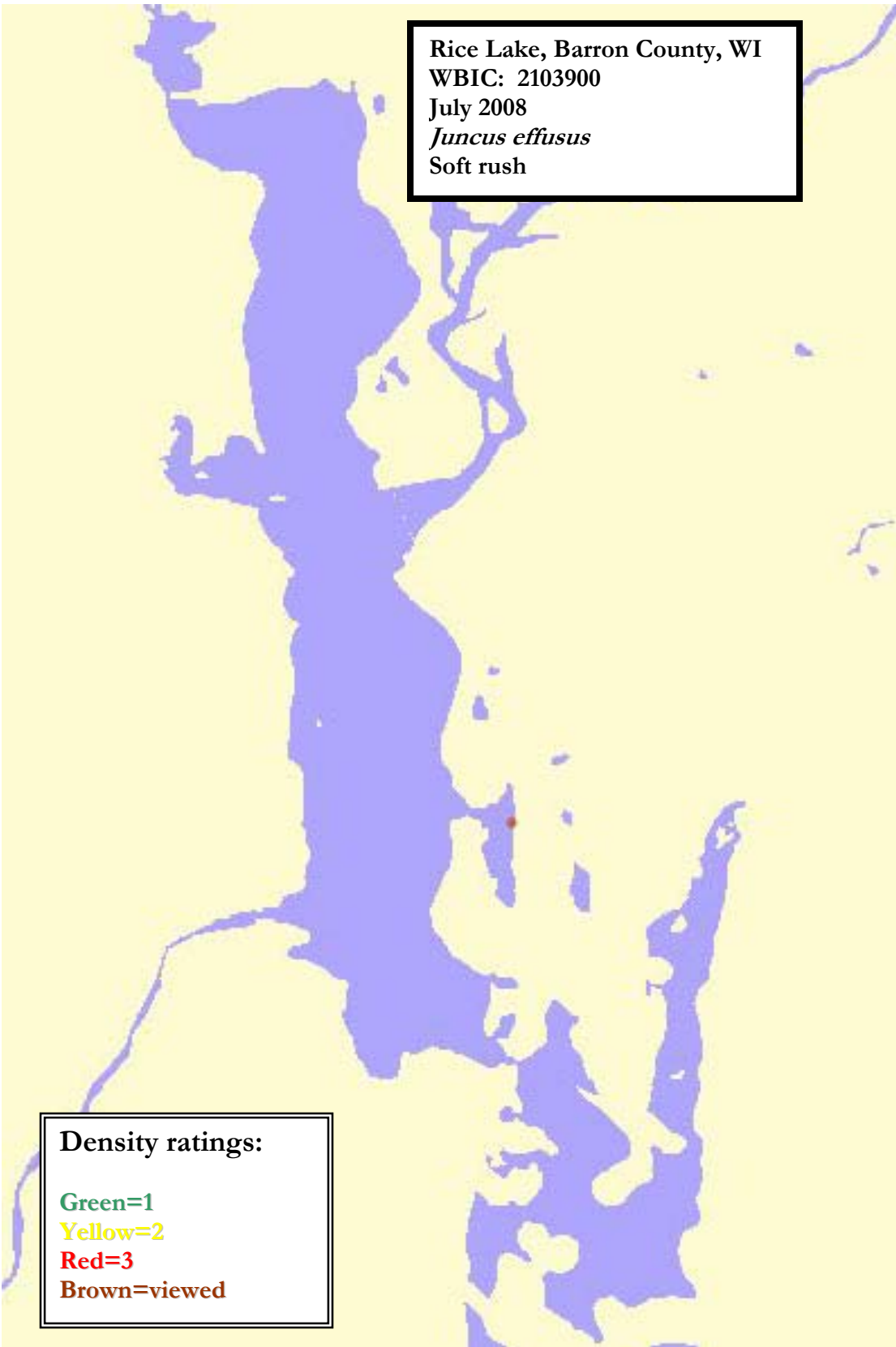
Density ratings:

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Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Lemna minor
Small duckweed

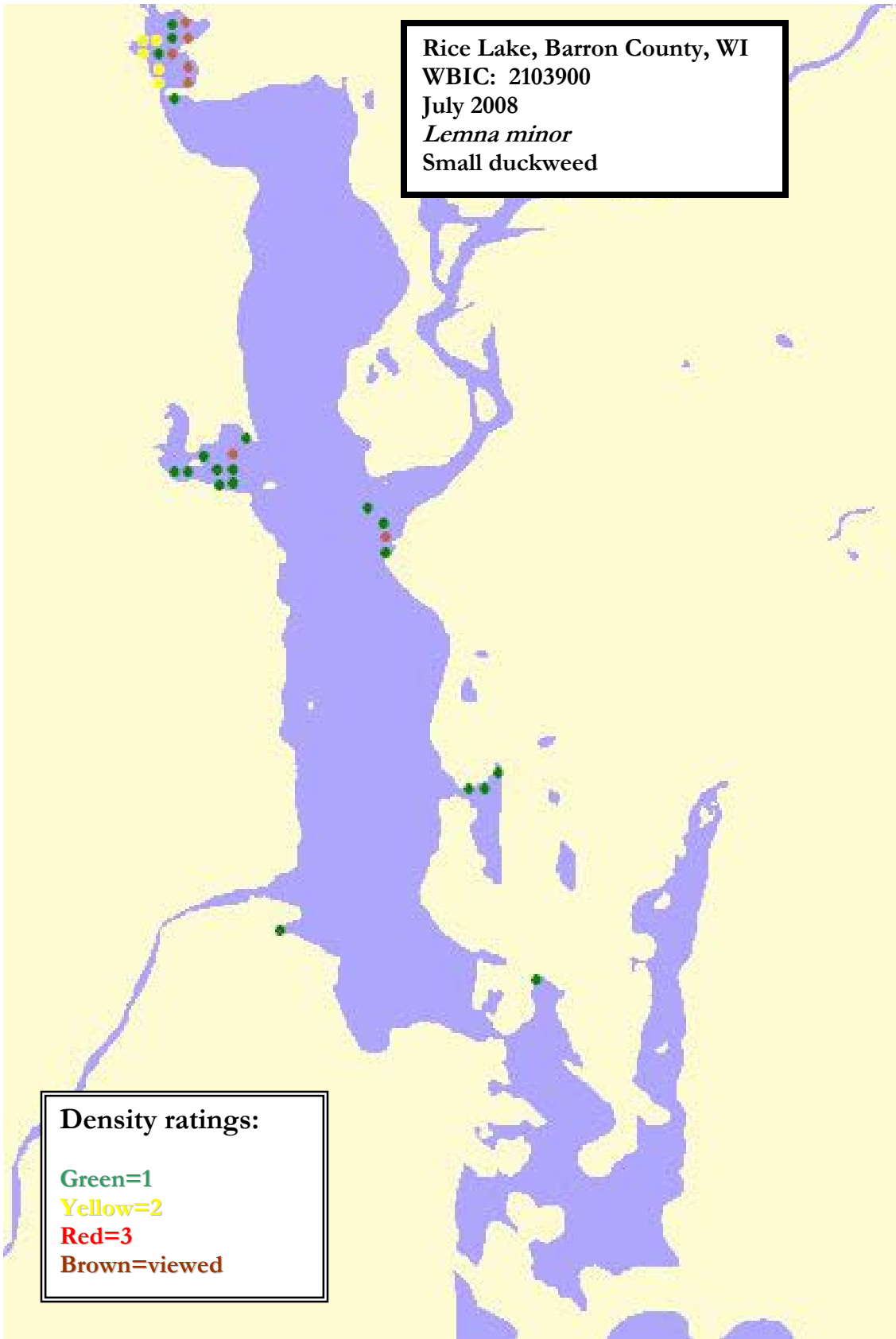
Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Lemna triscula
Forked duckweed

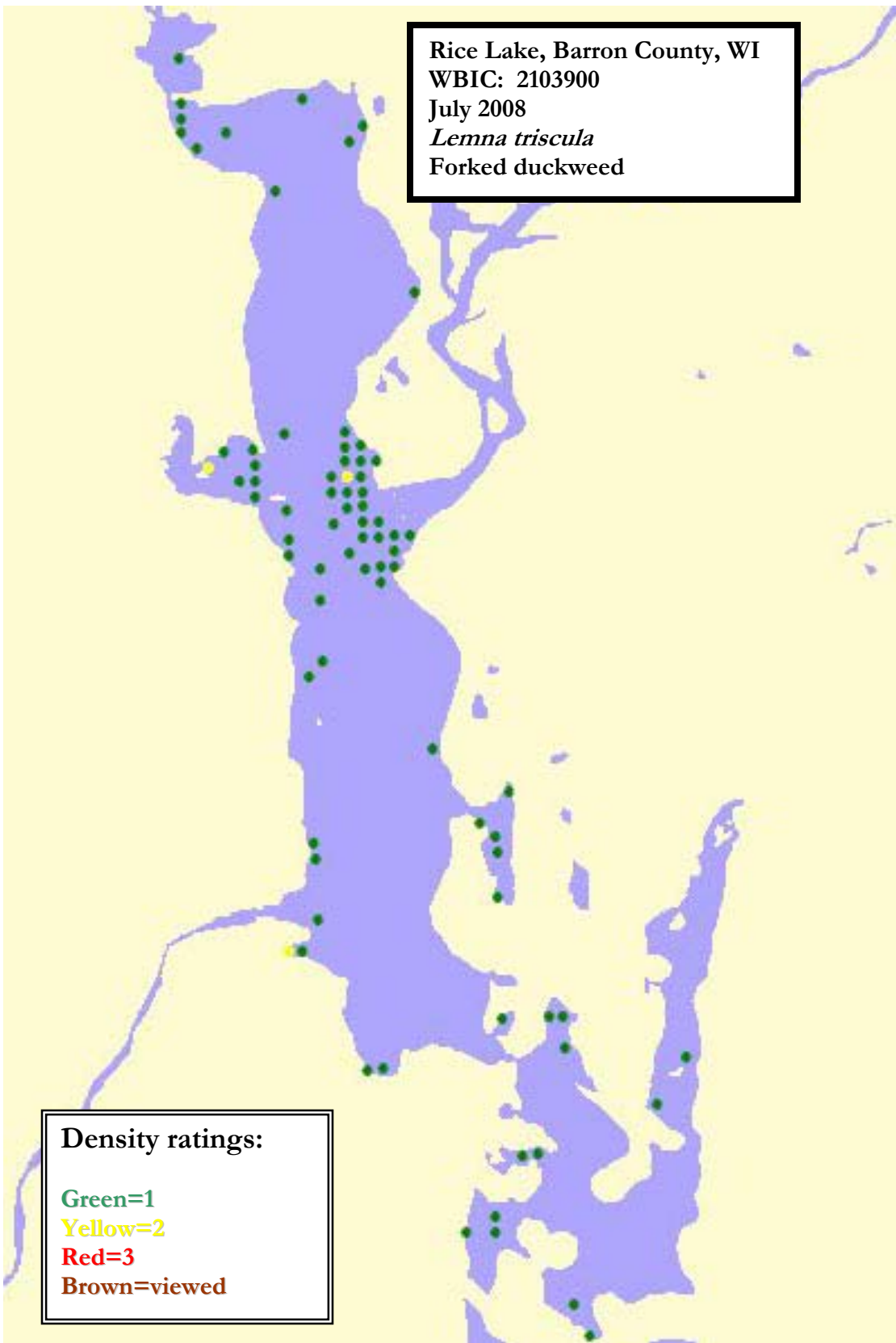
Density ratings:

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Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Megalodonta beckii
Water marigold

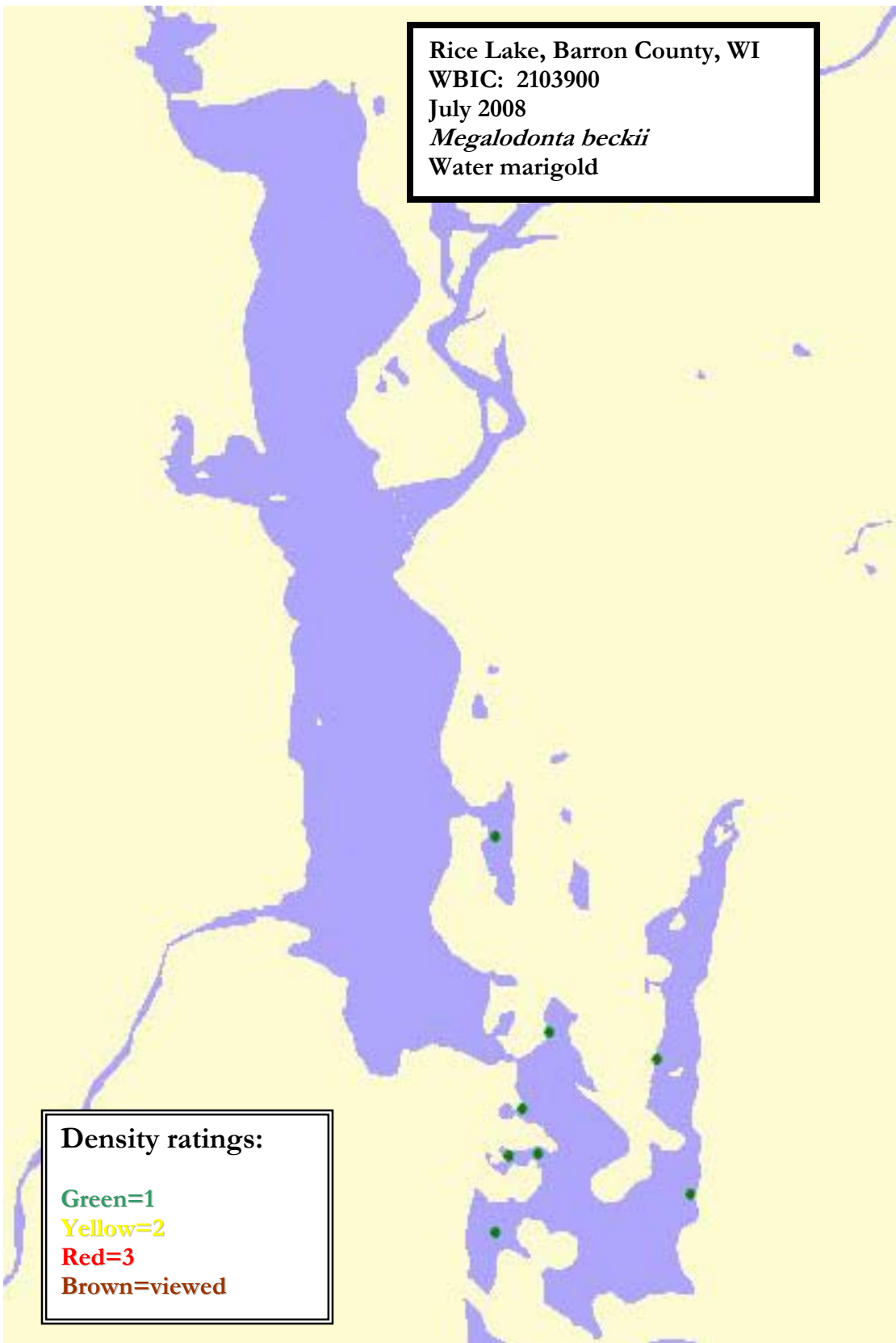
Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Myosotis scorpioides
Aquatic for-get-me-not



Density ratings:

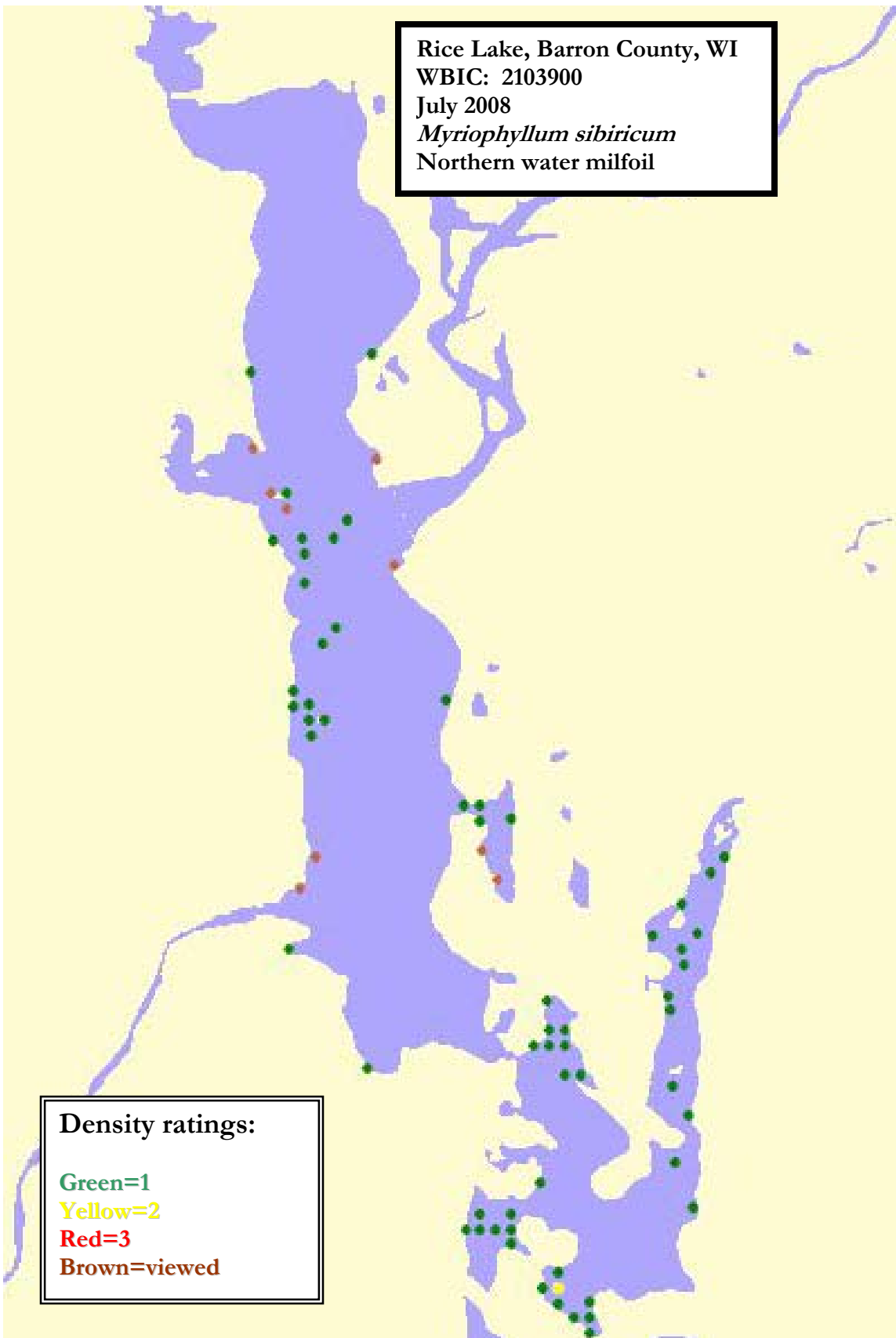
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Yellow=2

Red=3

Brown=viewed

Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Myriophyllum sibiricum
Northern water milfoil



Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed

Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Najas flexilis
Bushy pondweed

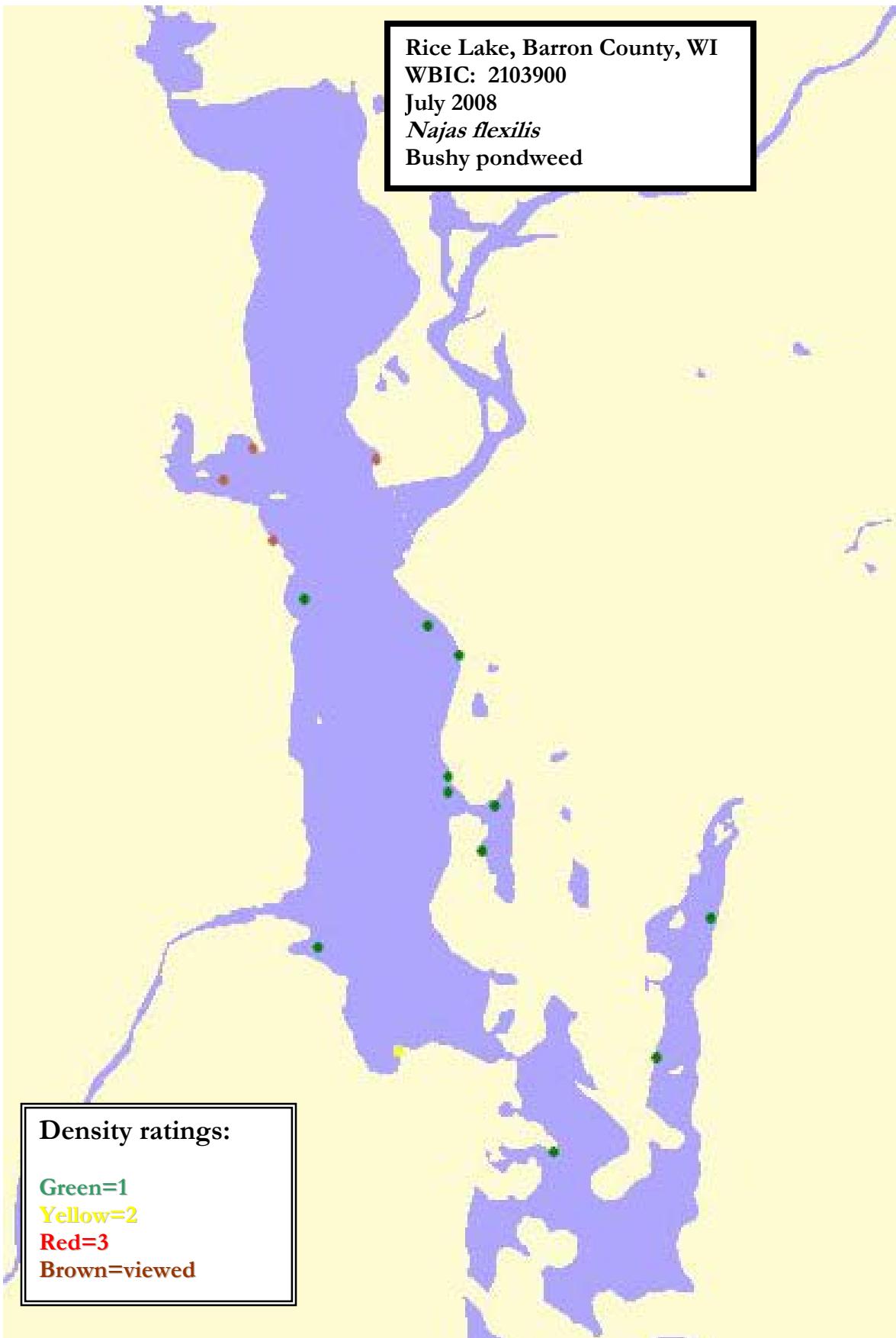
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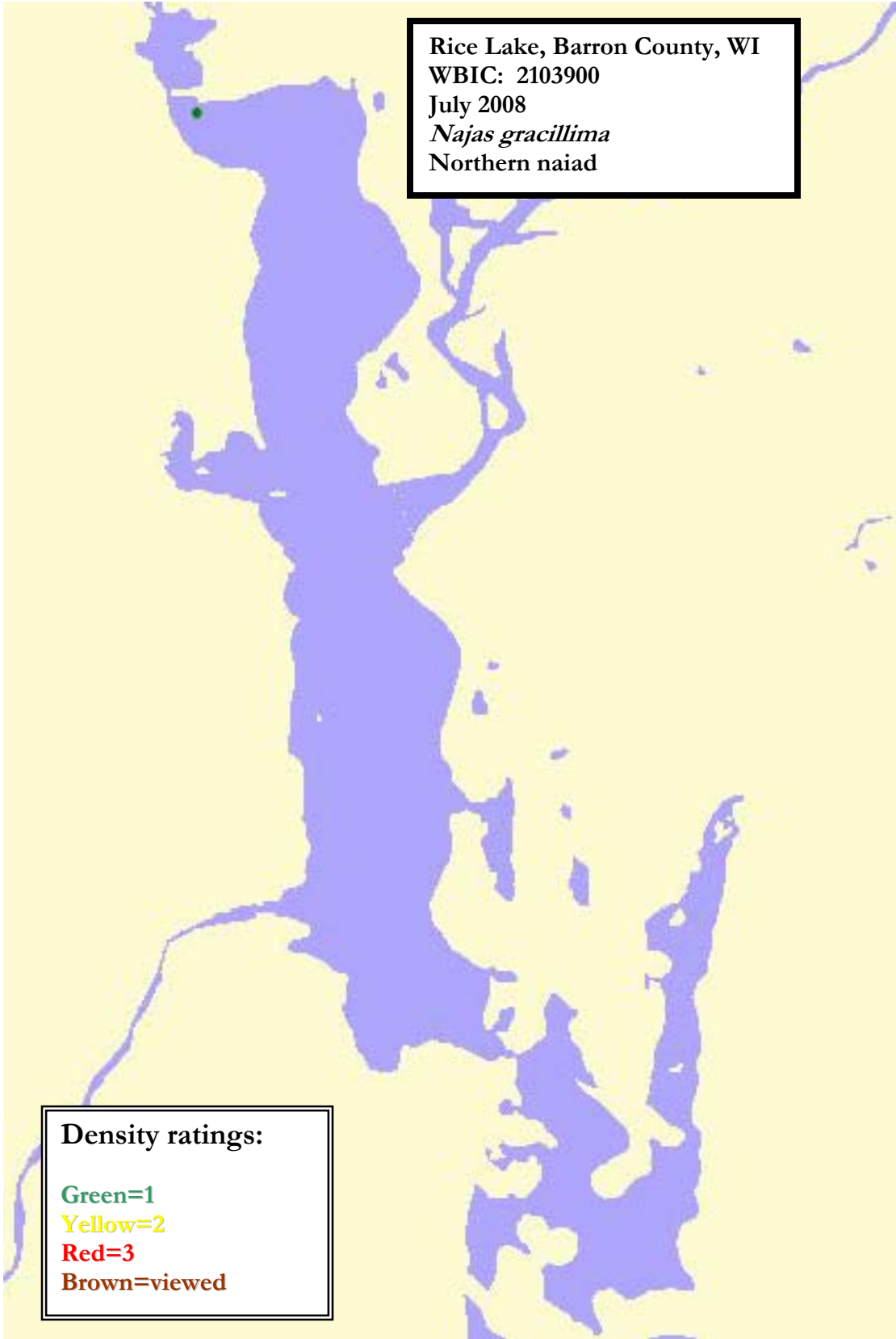
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Yellow=2

Red=3

Brown=viewed





Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Najas gracillima
Northern naiad

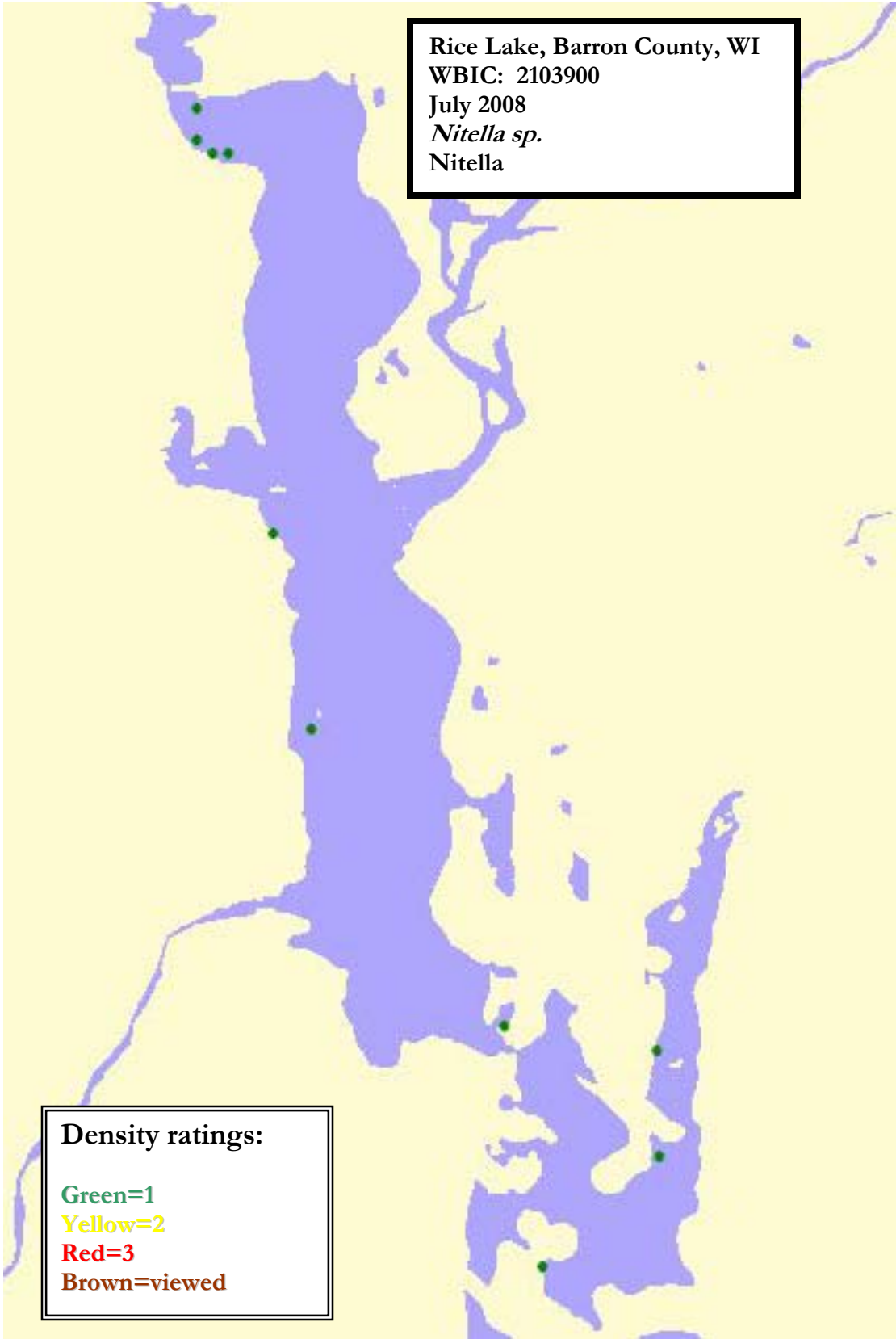
Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Nitella sp.
Nitella

Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed

Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Nuphar variegata
Spatterdock

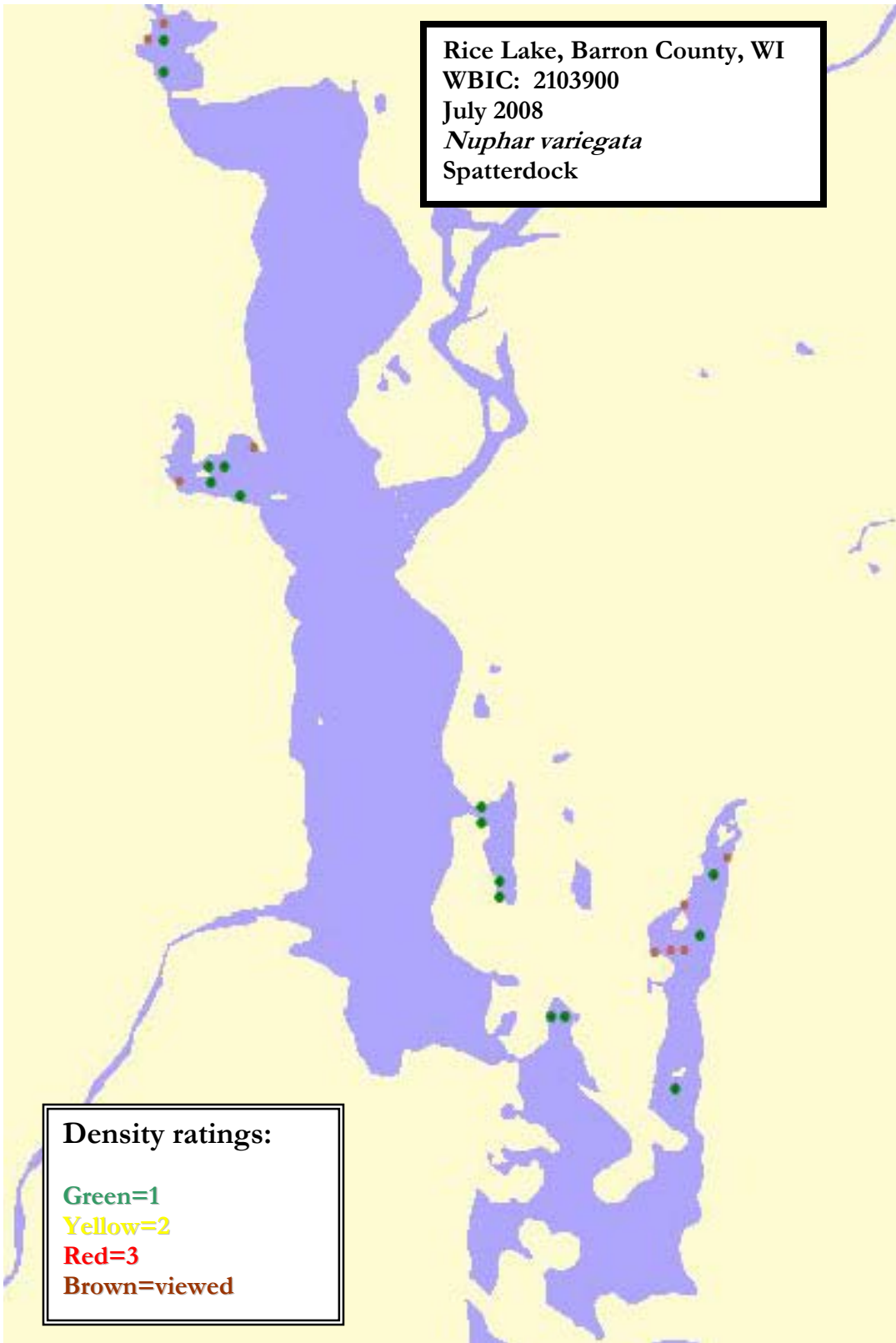
Density ratings:

Green=1

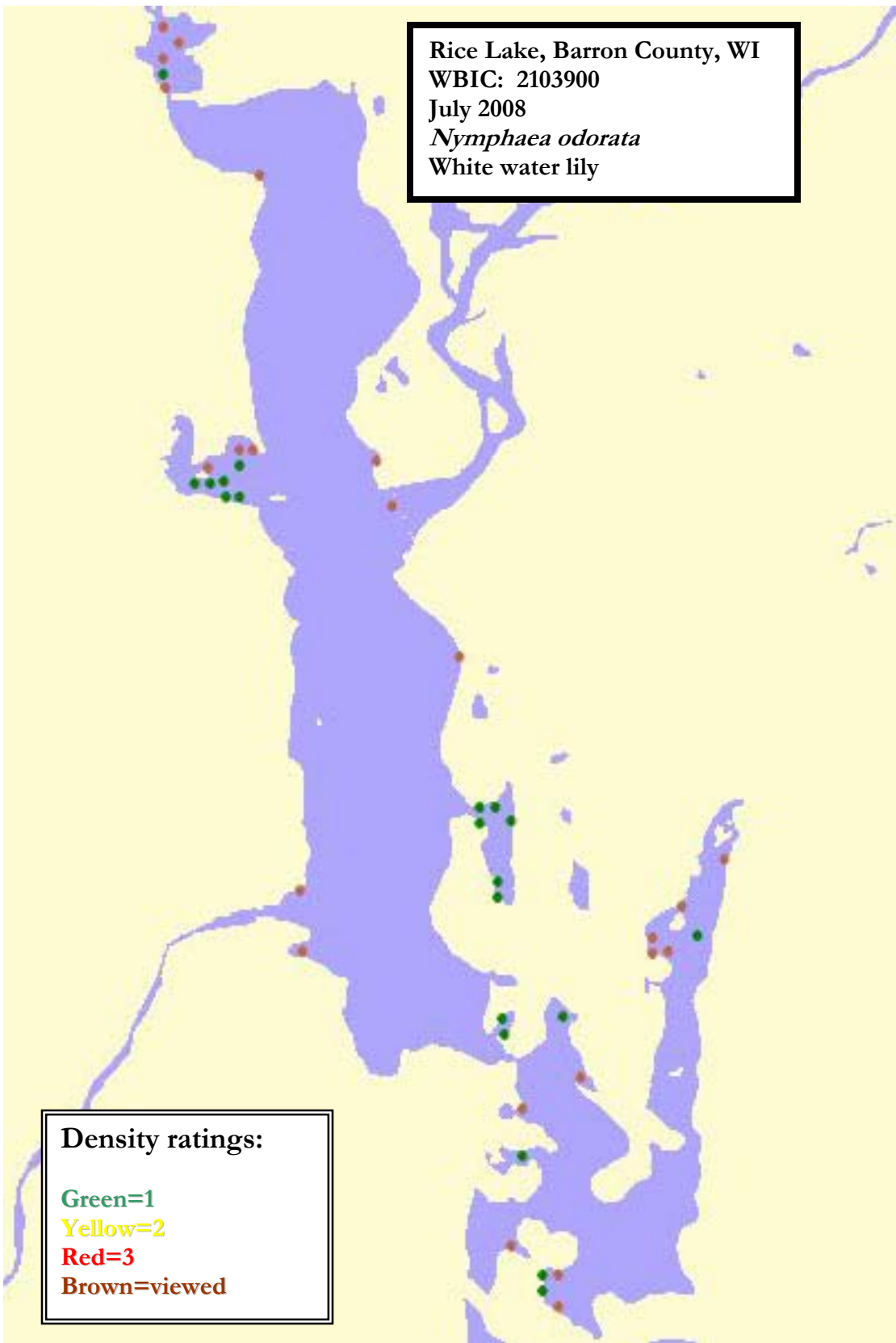
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Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Nymphaea odorata
White water lily



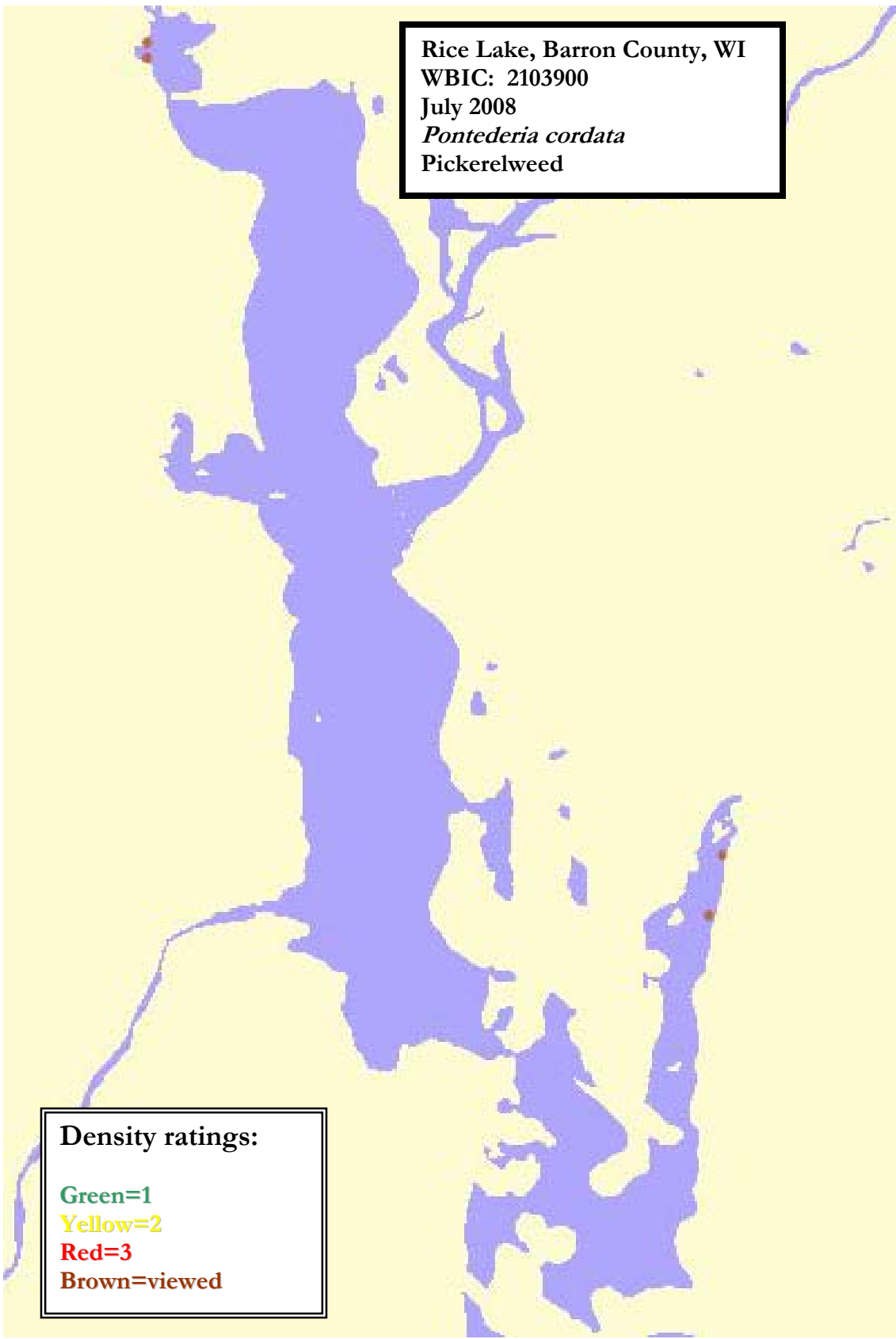
Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Pontederia cordata
Pickerelweed

Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed

Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Potamogeton amplifolius
Large-leaf pondweed

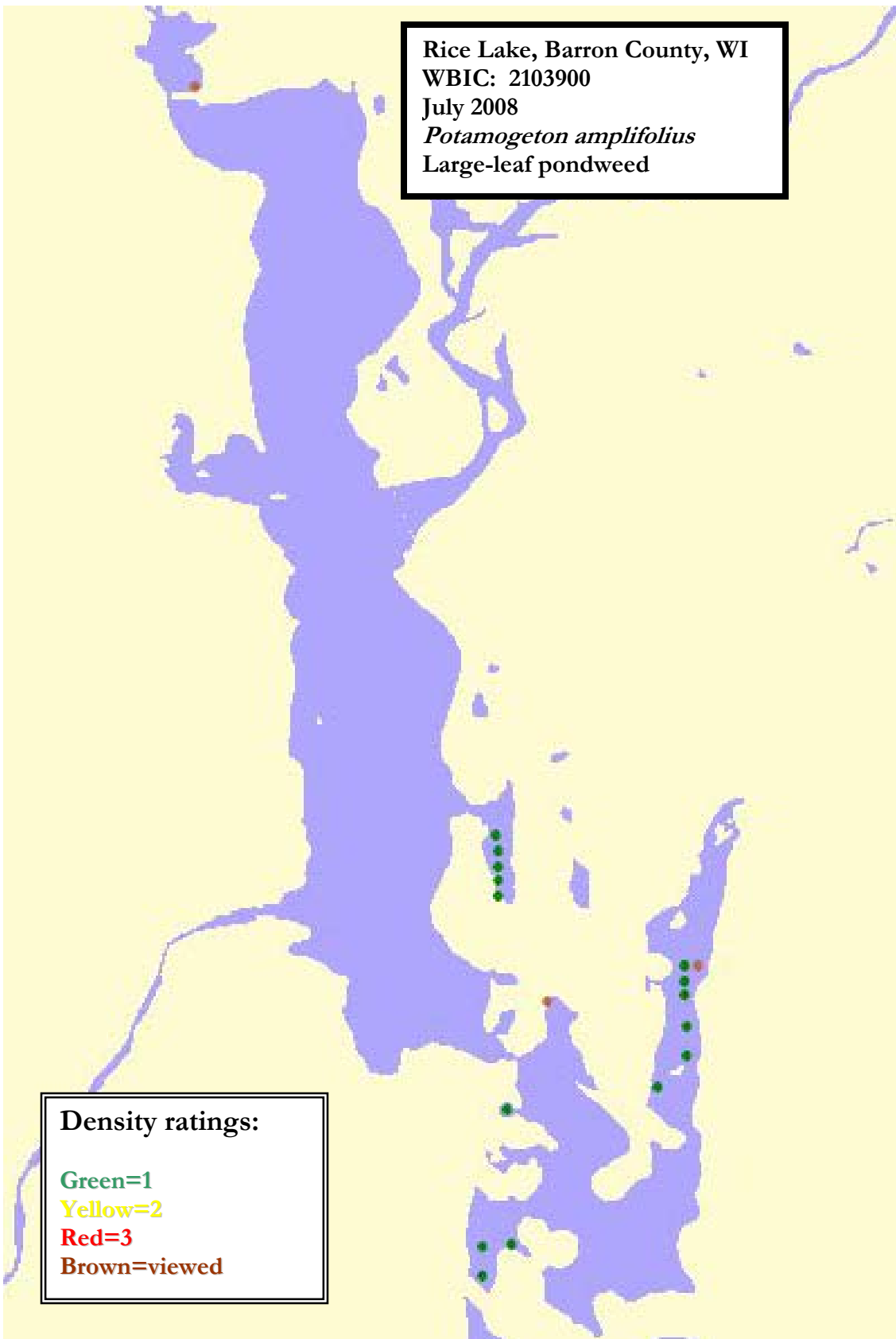
Density ratings:

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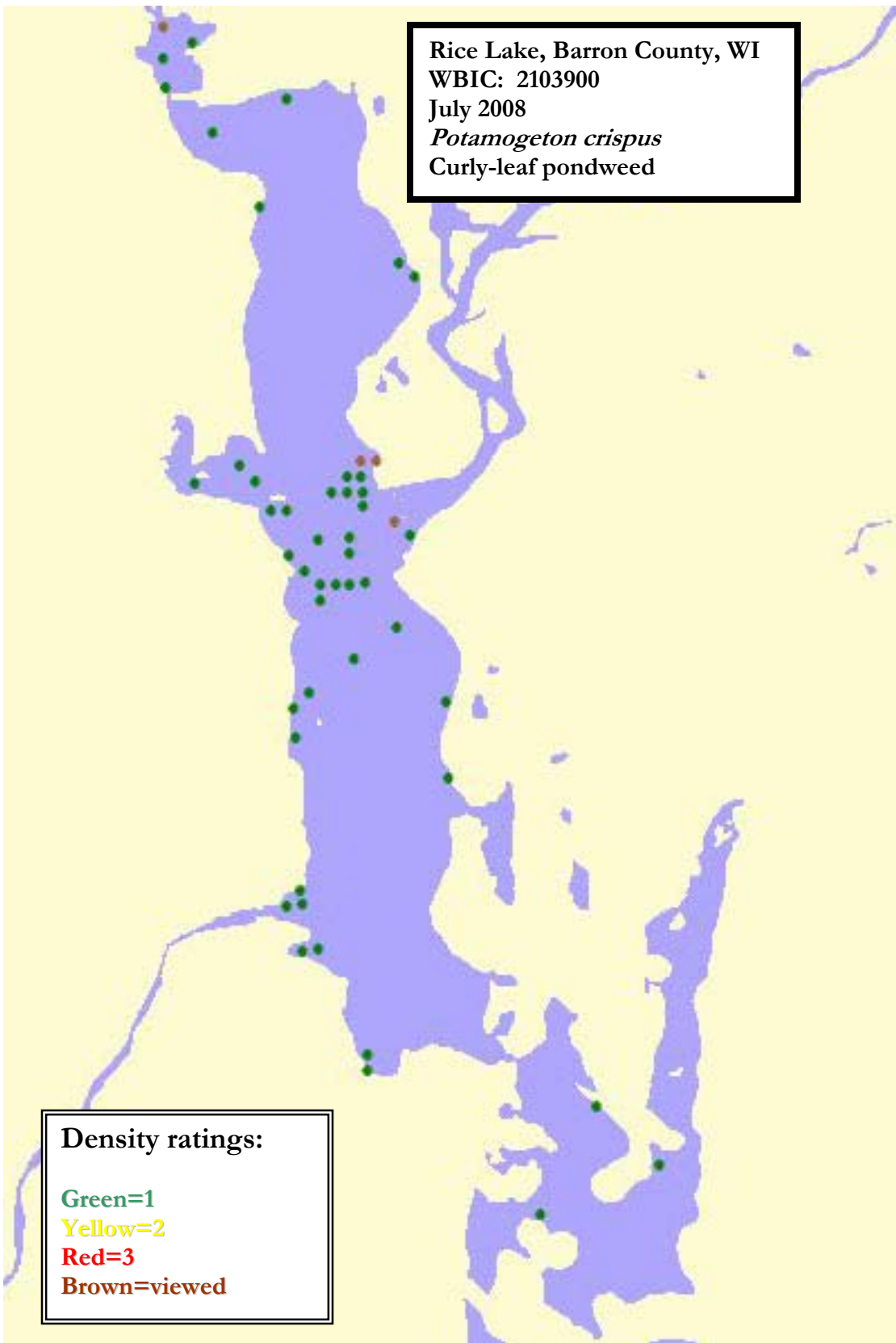
Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Potamogeton crispus
Curly-leaf pondweed



Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed

Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Potamogeton epihydrous
Ribbon-leaf pondweed

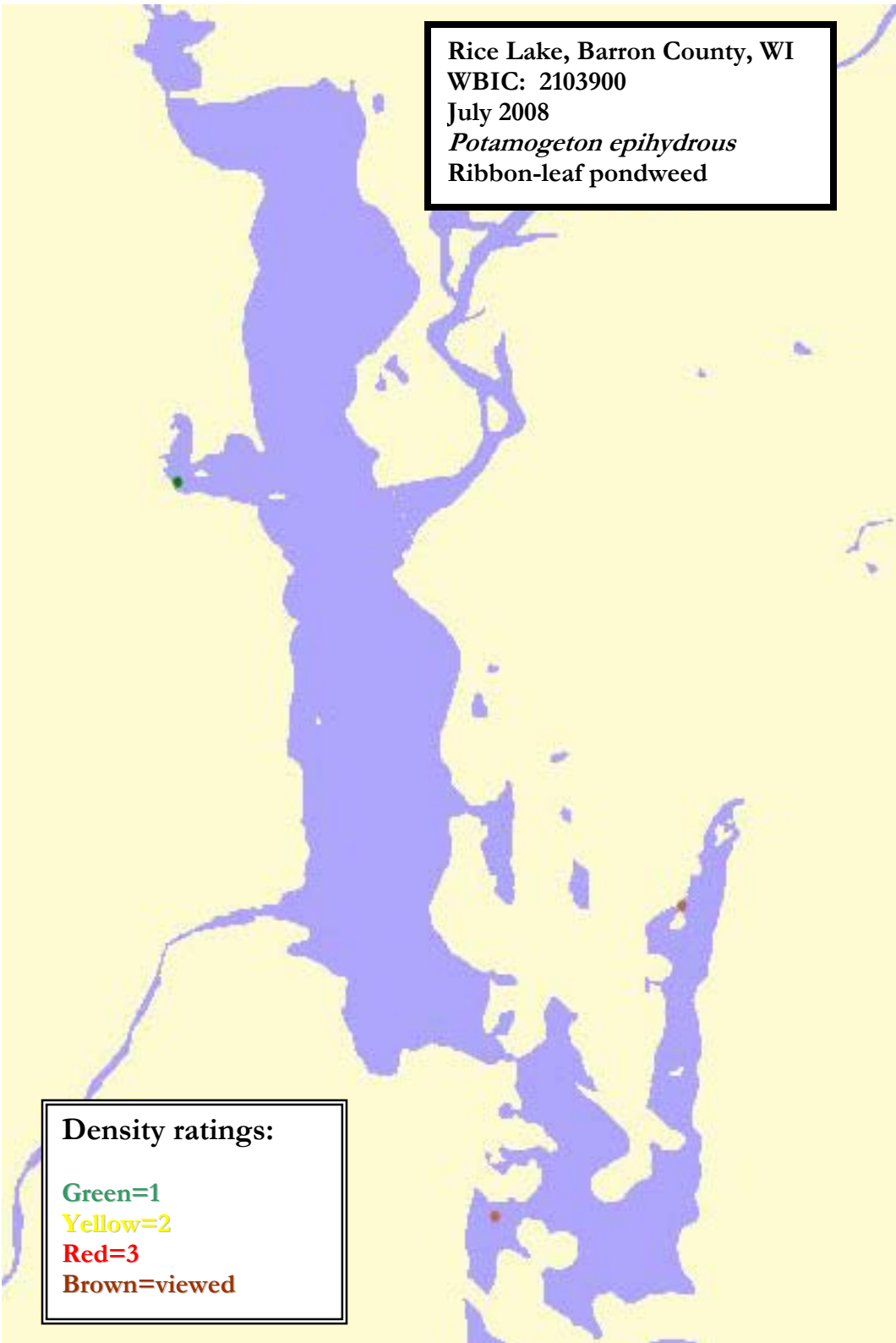
Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Potamogeton foliosus
Leafy pondweed

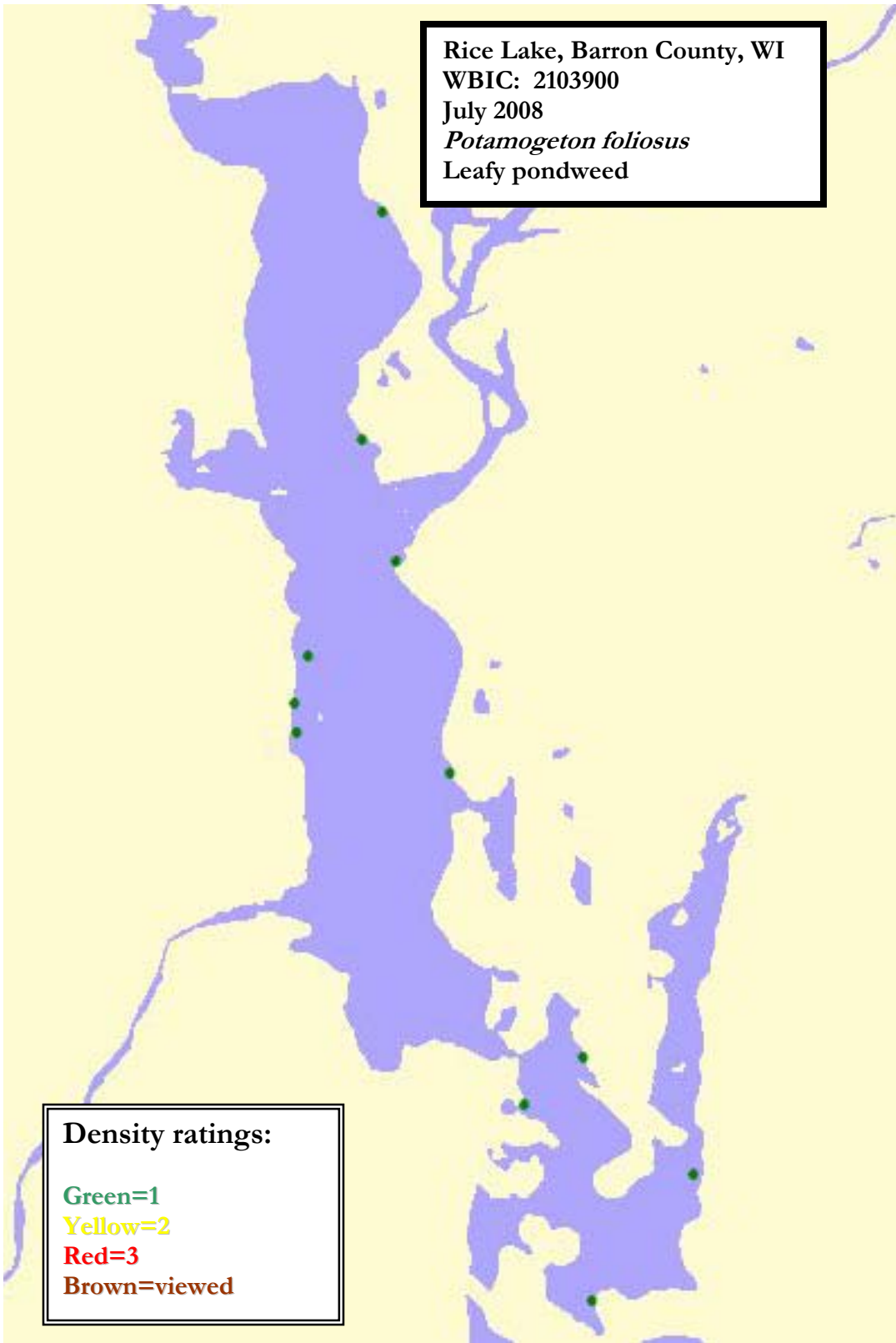
Density ratings:

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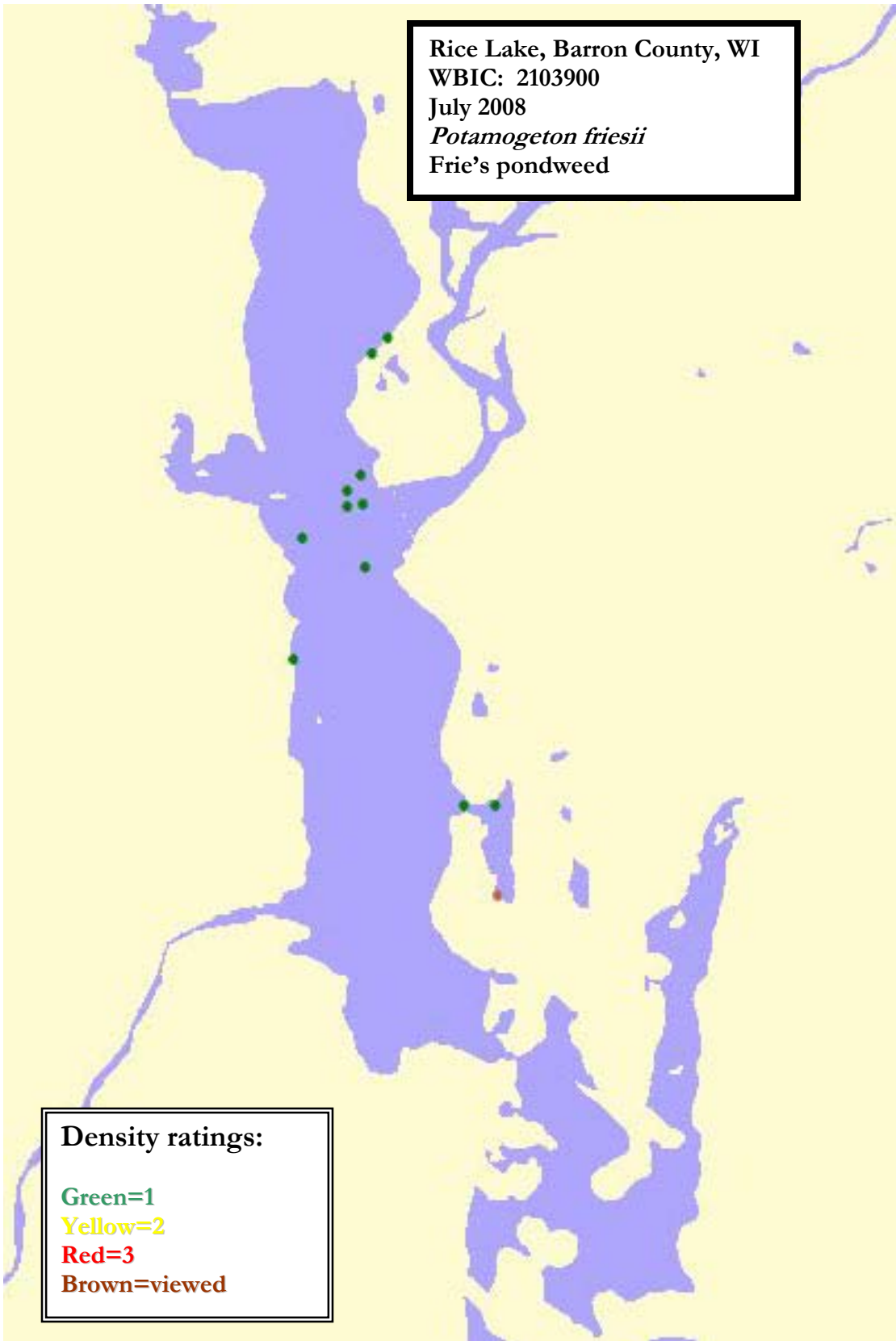
Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Potamogeton friesii
Frie's pondweed



Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed

Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Sagittaria graminea
Grass-leaved arrowhead

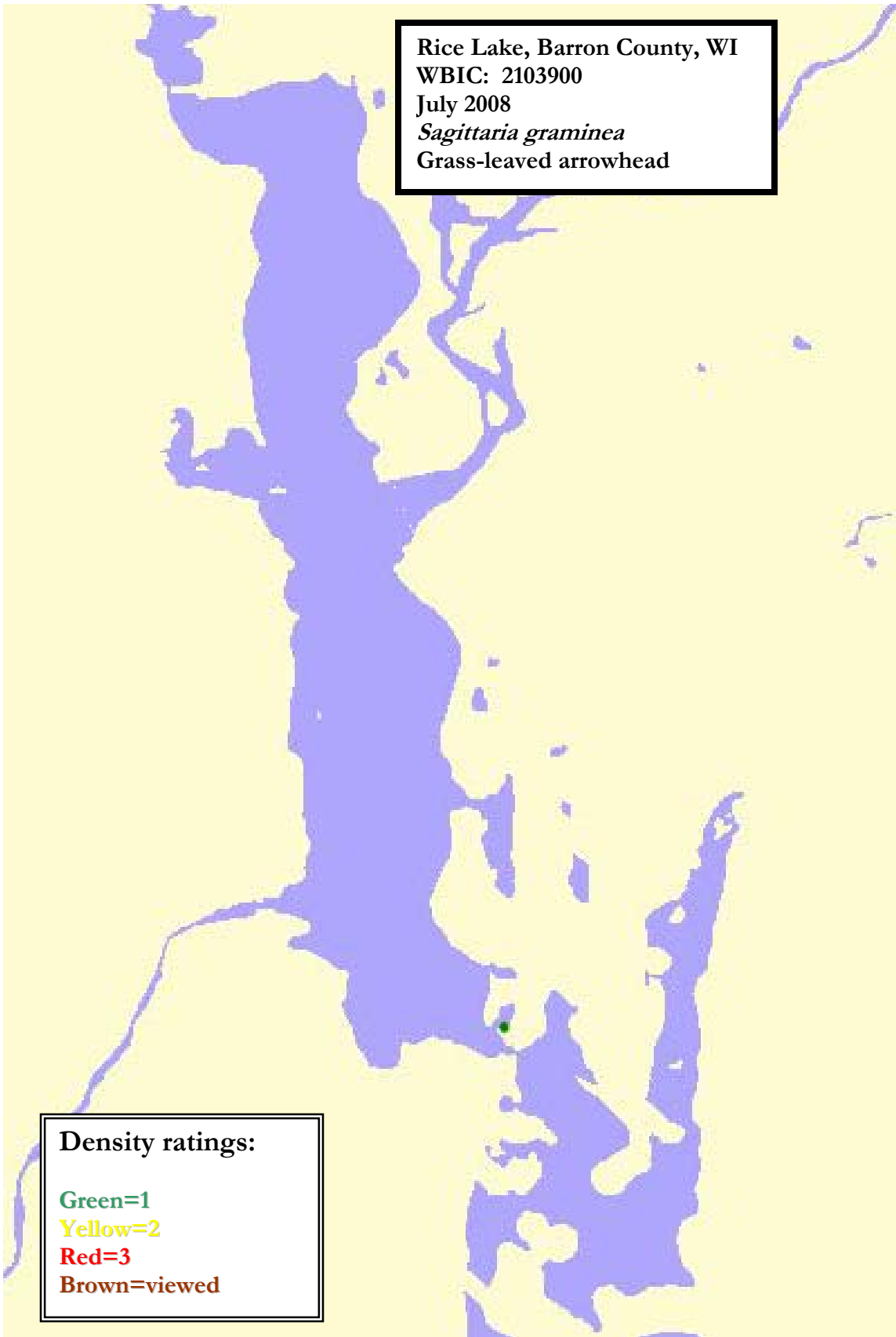
Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Potamogeton natans
Floating-leaf pondweed

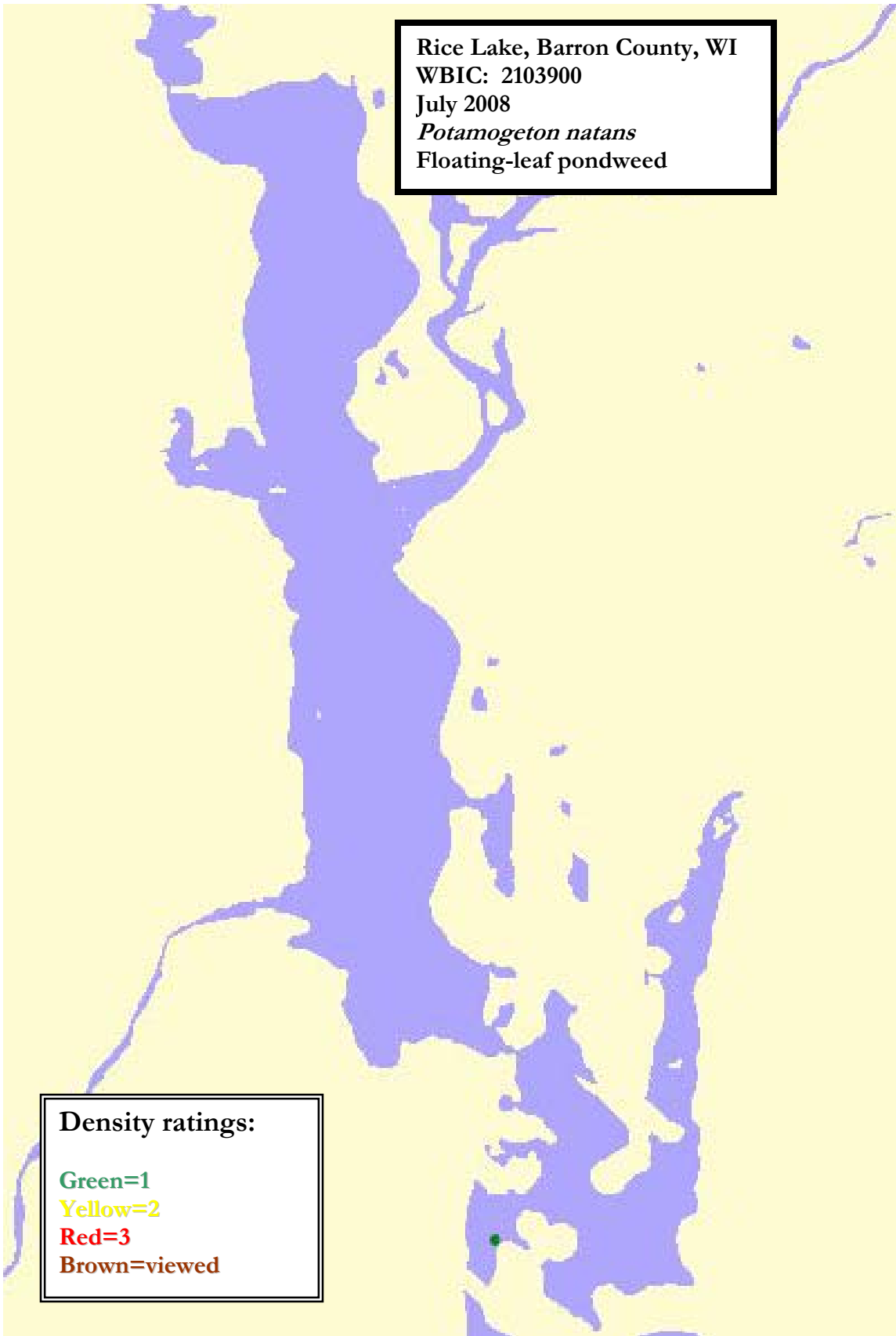
Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Potamogeton praelongis
White-stem pondweed

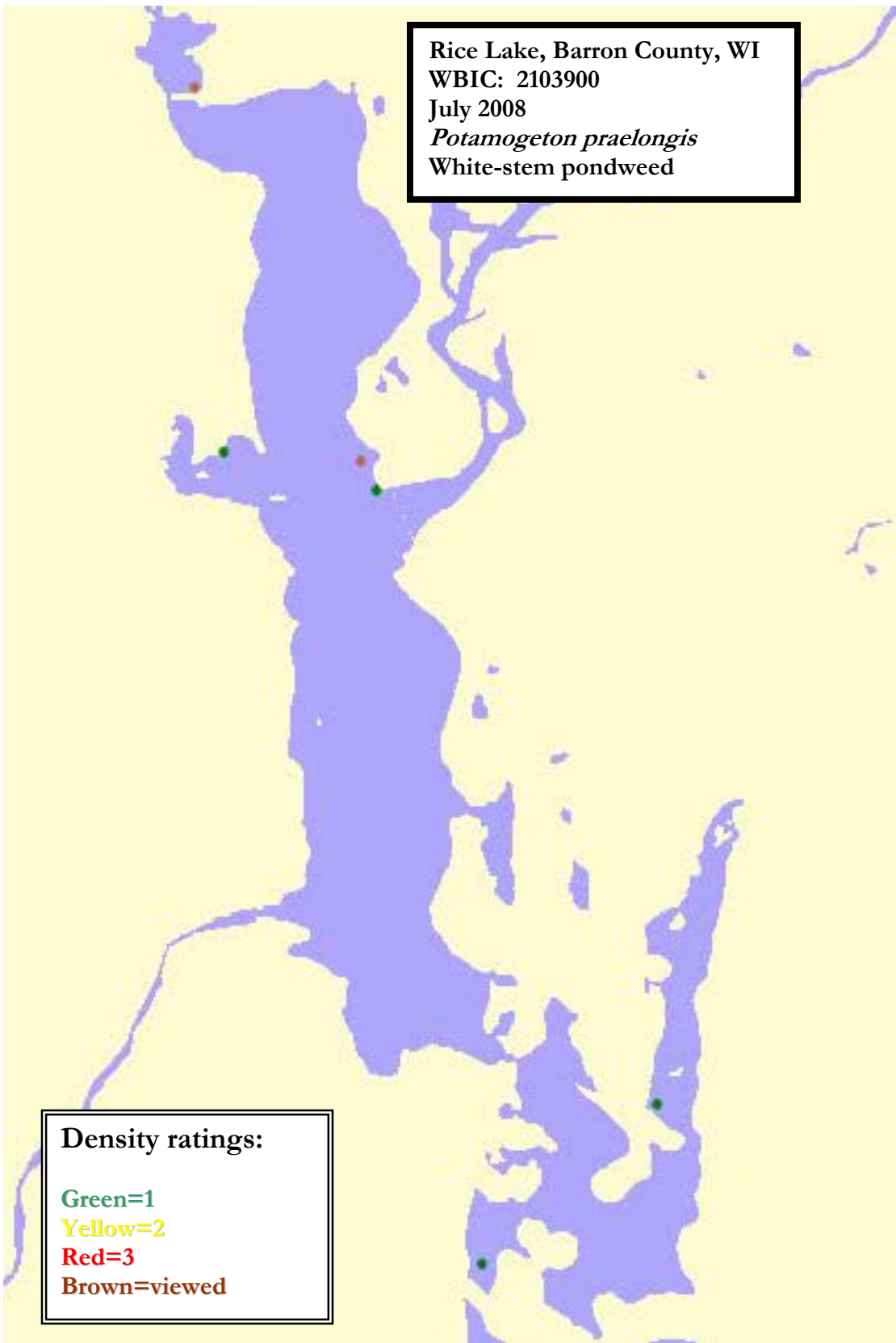
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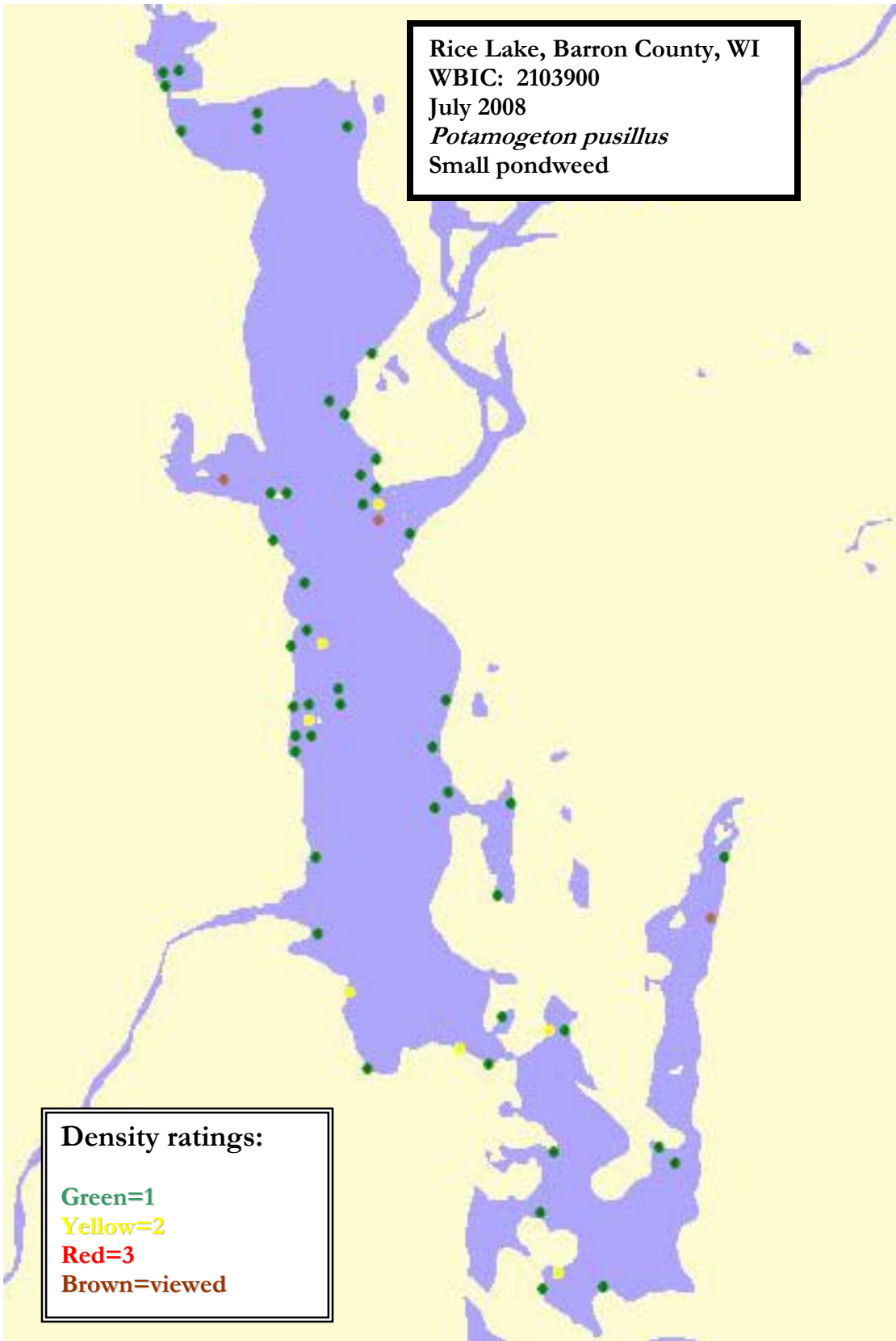
Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Potamogeton pusillus
Small pondweed



Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed

Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Potamogeton richardsonii
Clasping leaved pondweed

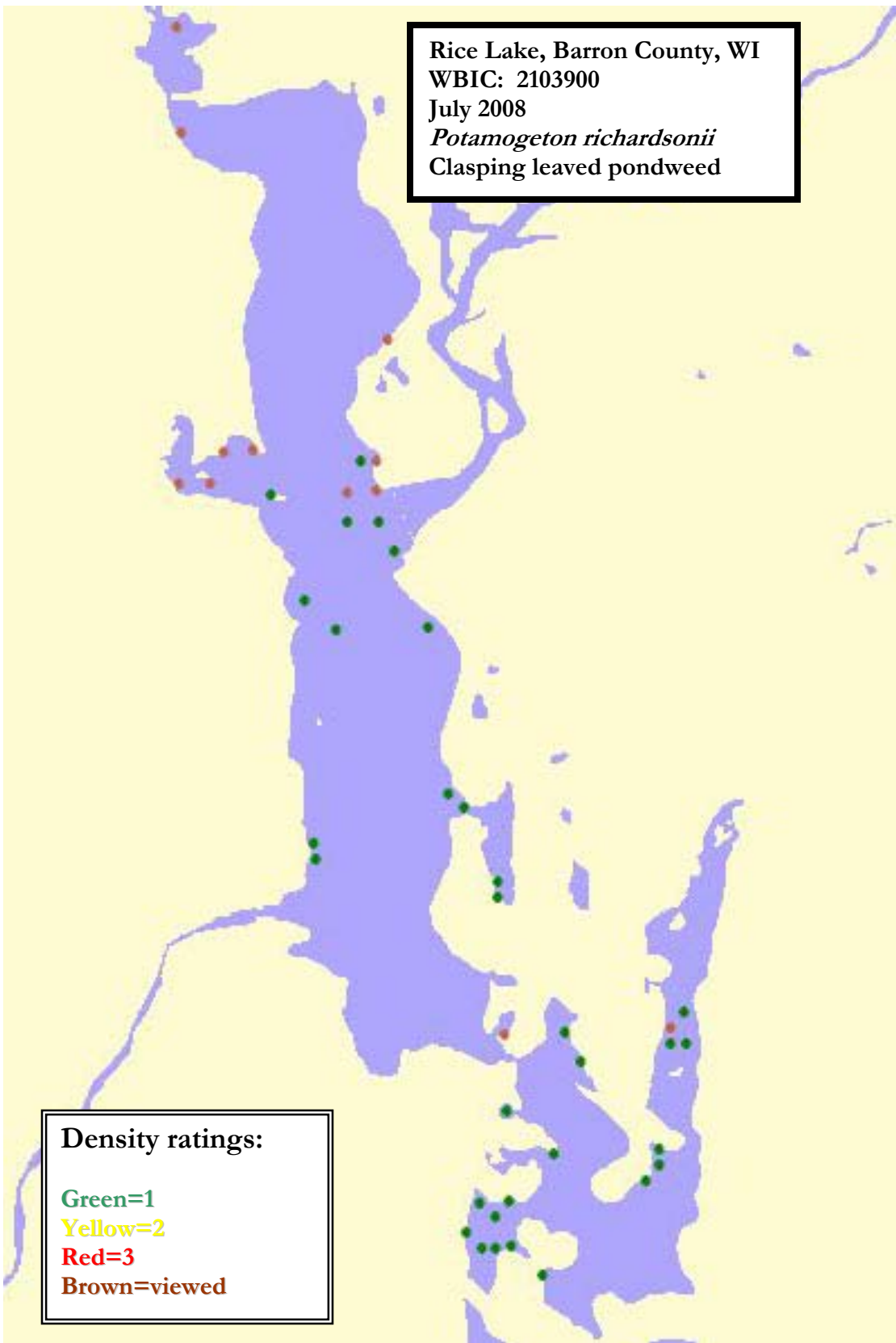
Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Potamogeton robbinsii
Robbin's pondweed

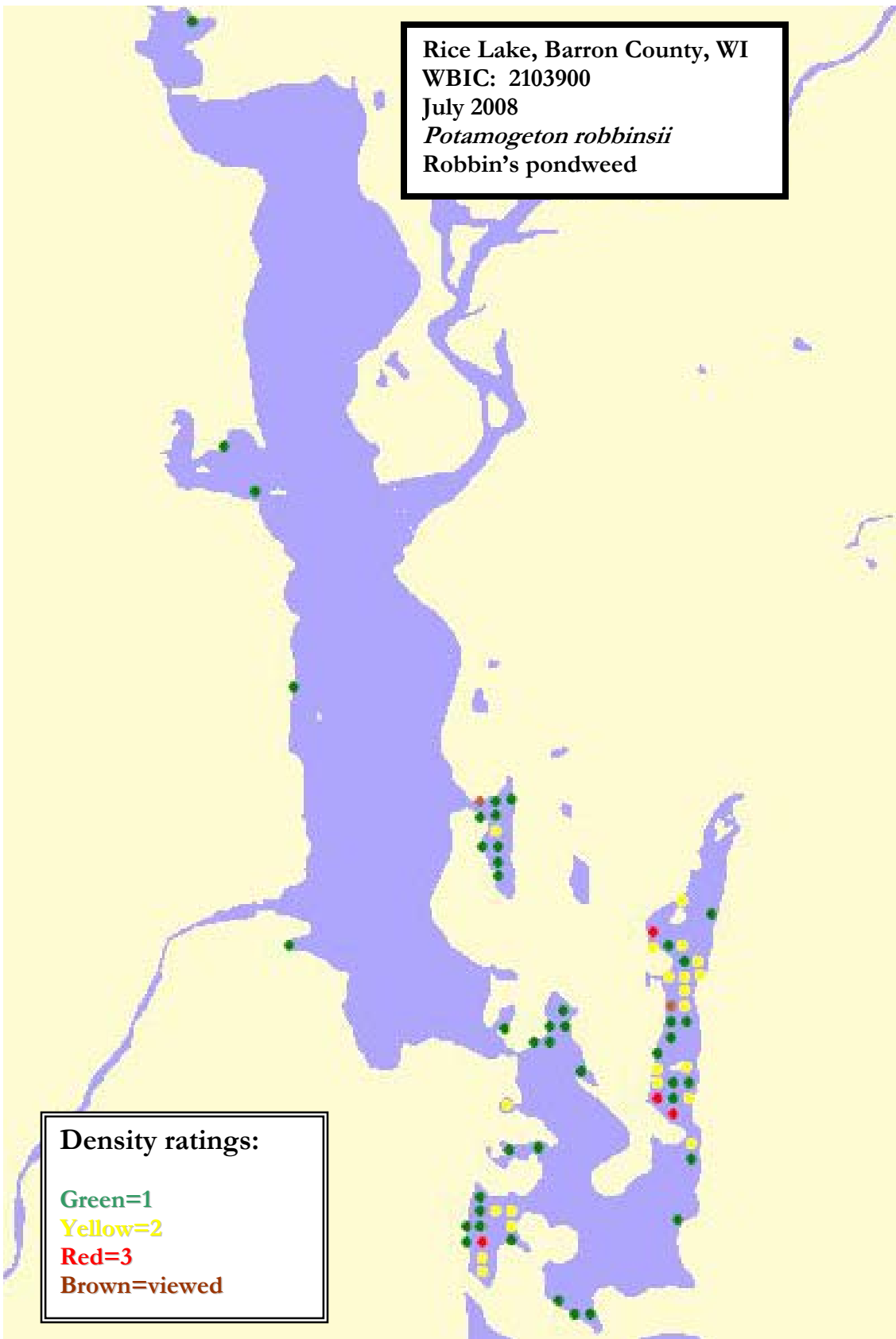
Density ratings:

Green=1

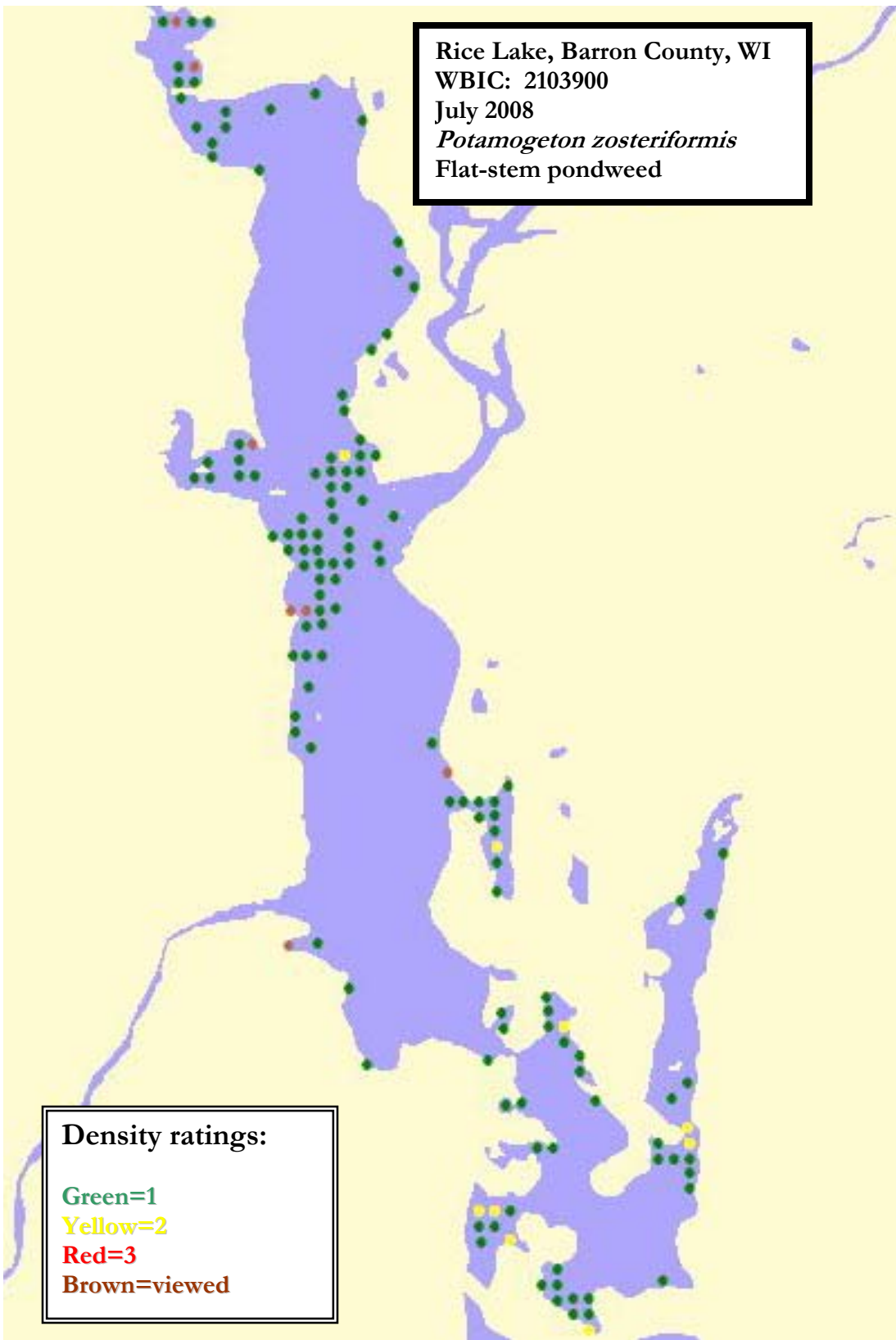
Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Potamogeton zosteriformis
Flat-stem pondweed



Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed

Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Ranunculus aquatilis
Stiff water crowfoot

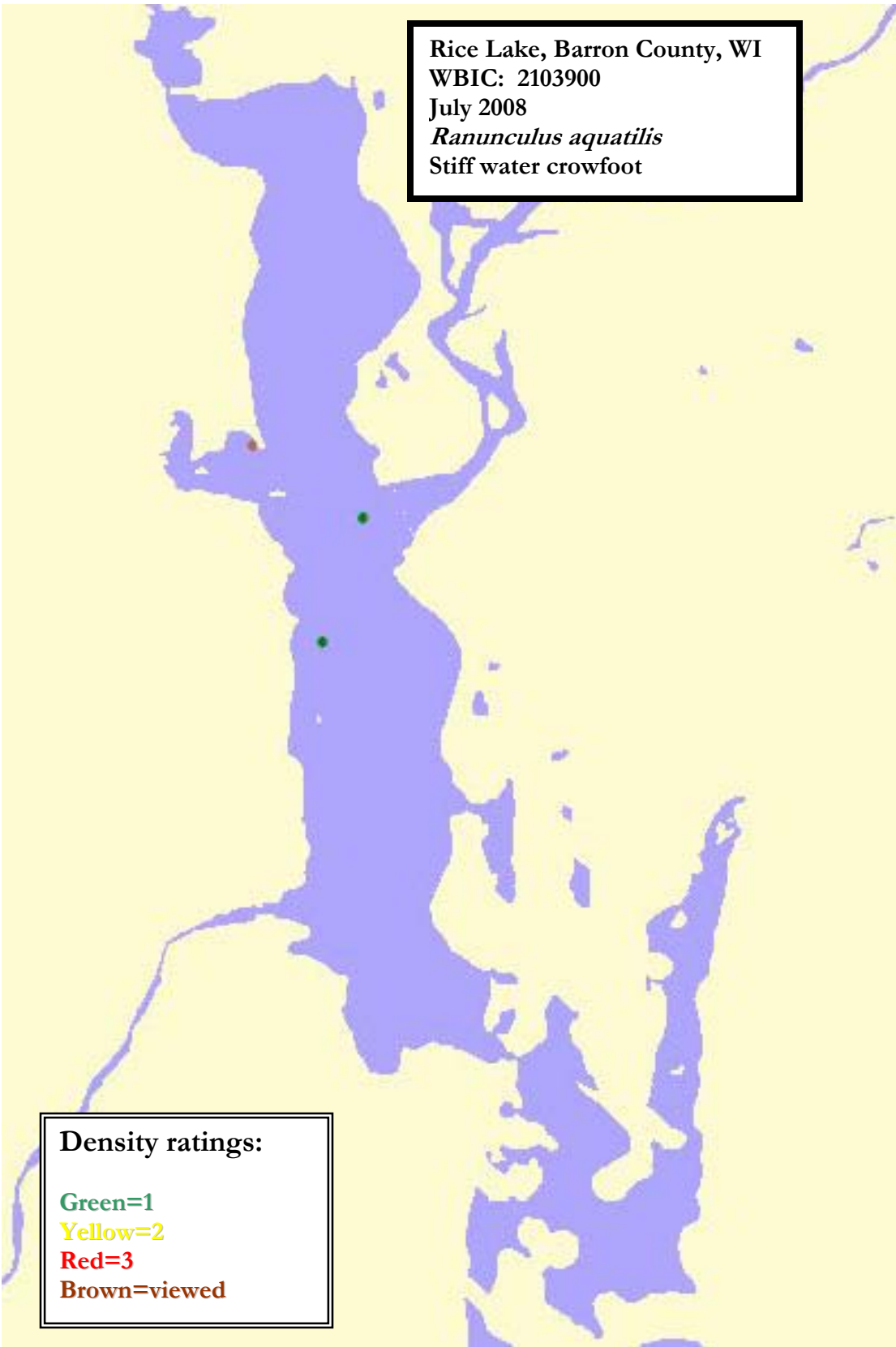
Density ratings:

Green=1

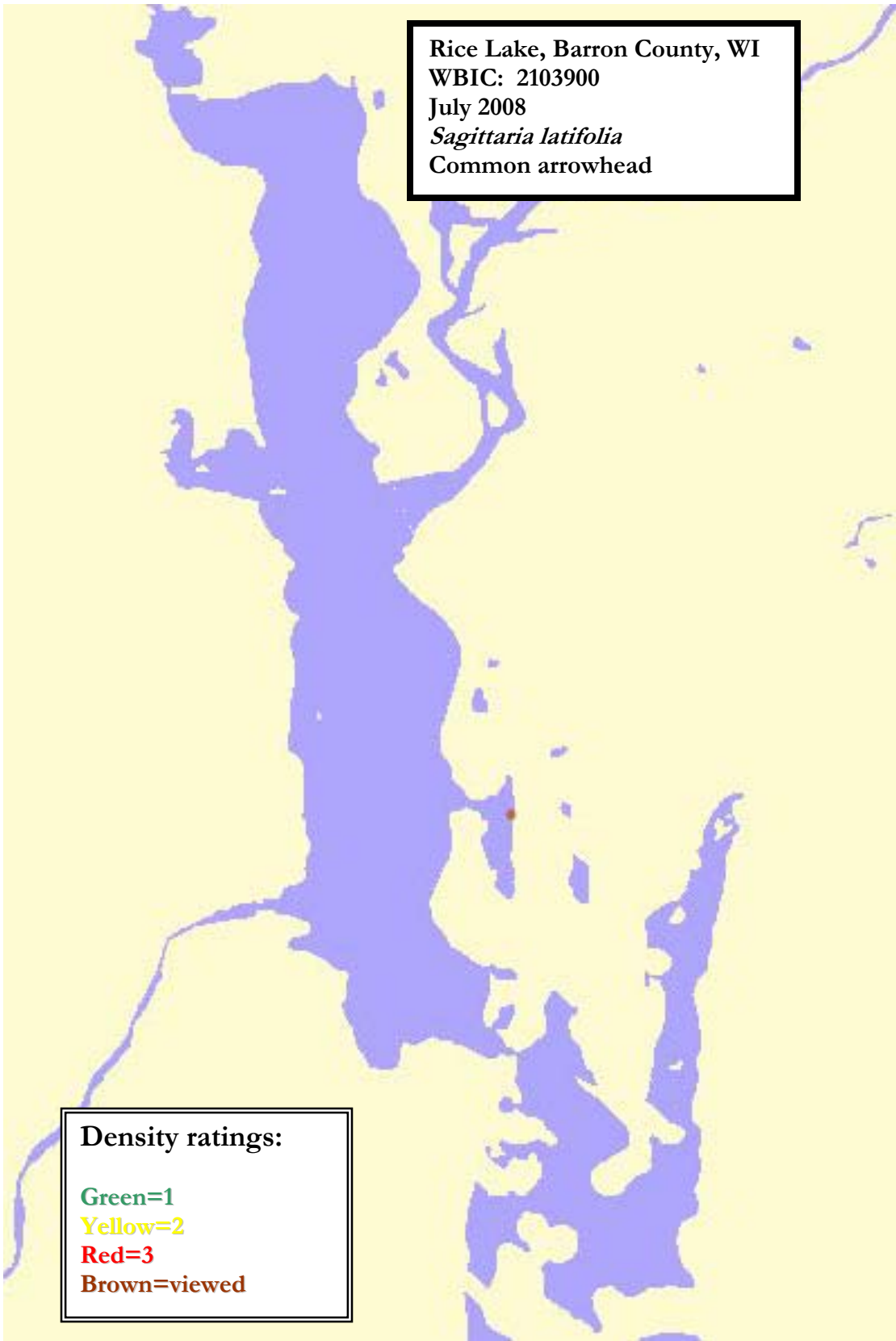
Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Sagittaria latifolia
Common arrowhead



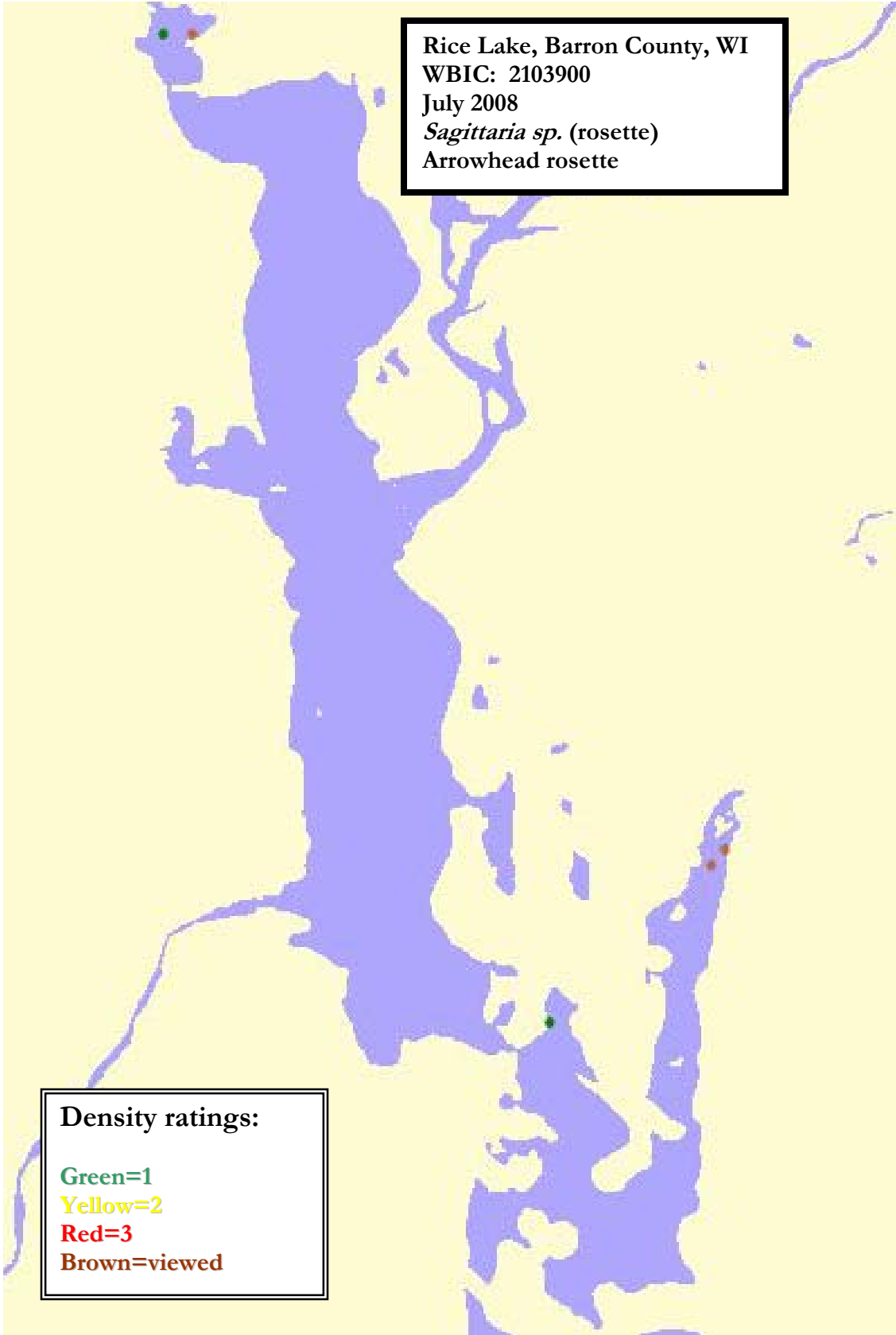
Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Sagittaria sp. (rosette)
Arrowhead rosette

Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed

Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Schoenoplectus acutus
Hardstem bulrush

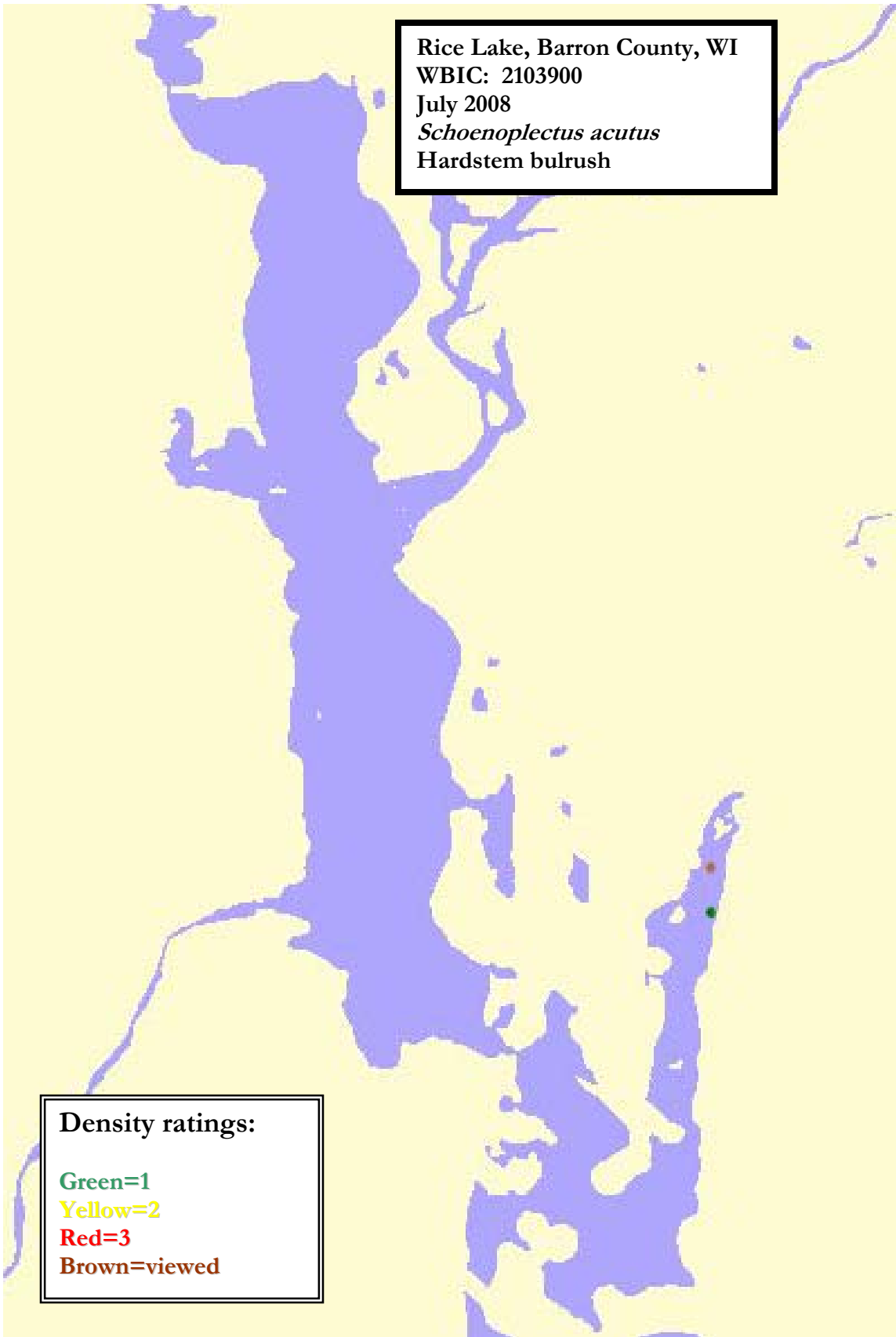
Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900

July 2008

Schoenoplectus tabernaemontani
Softstem bulrush

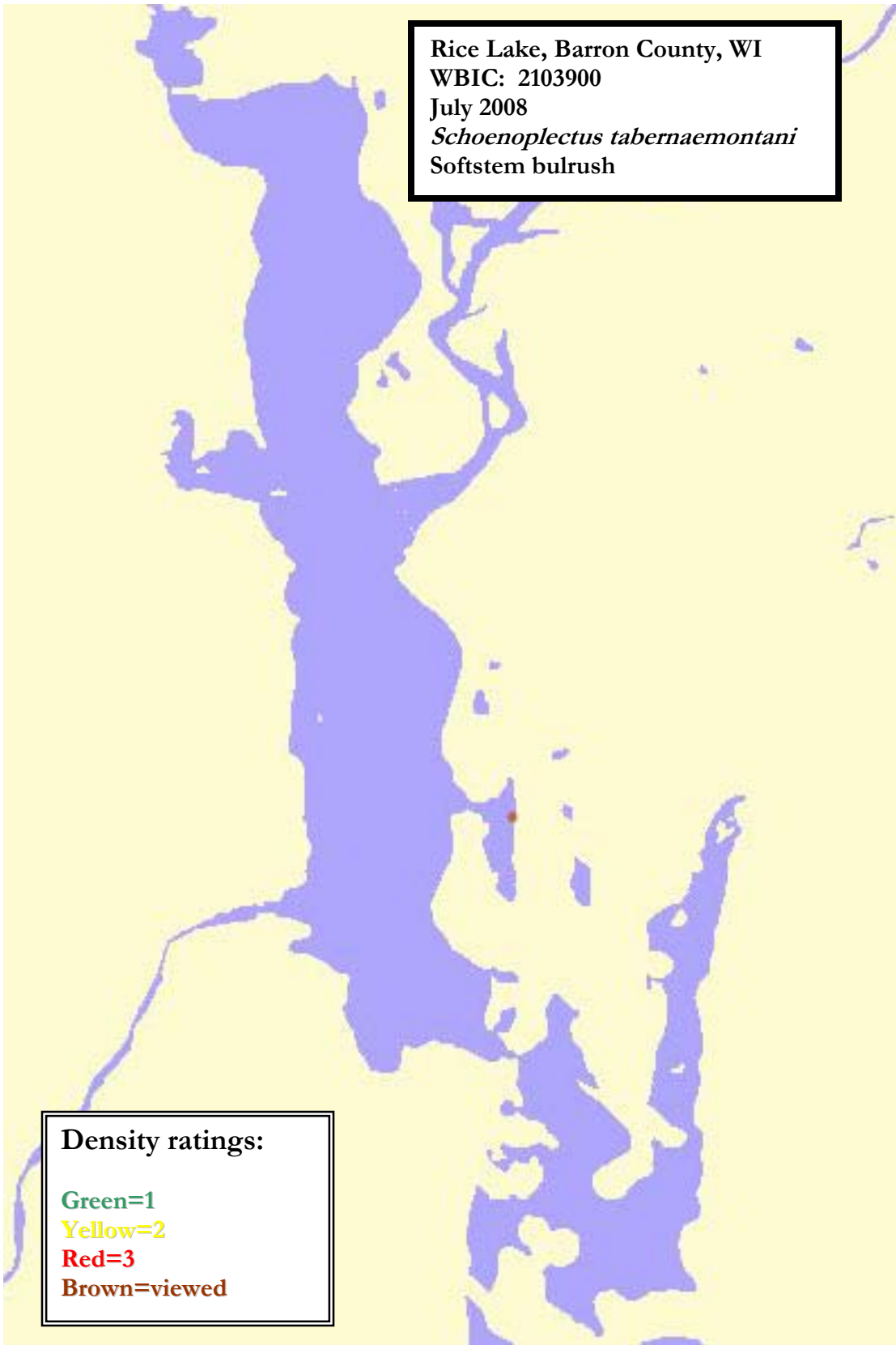
Density ratings:

Green=1

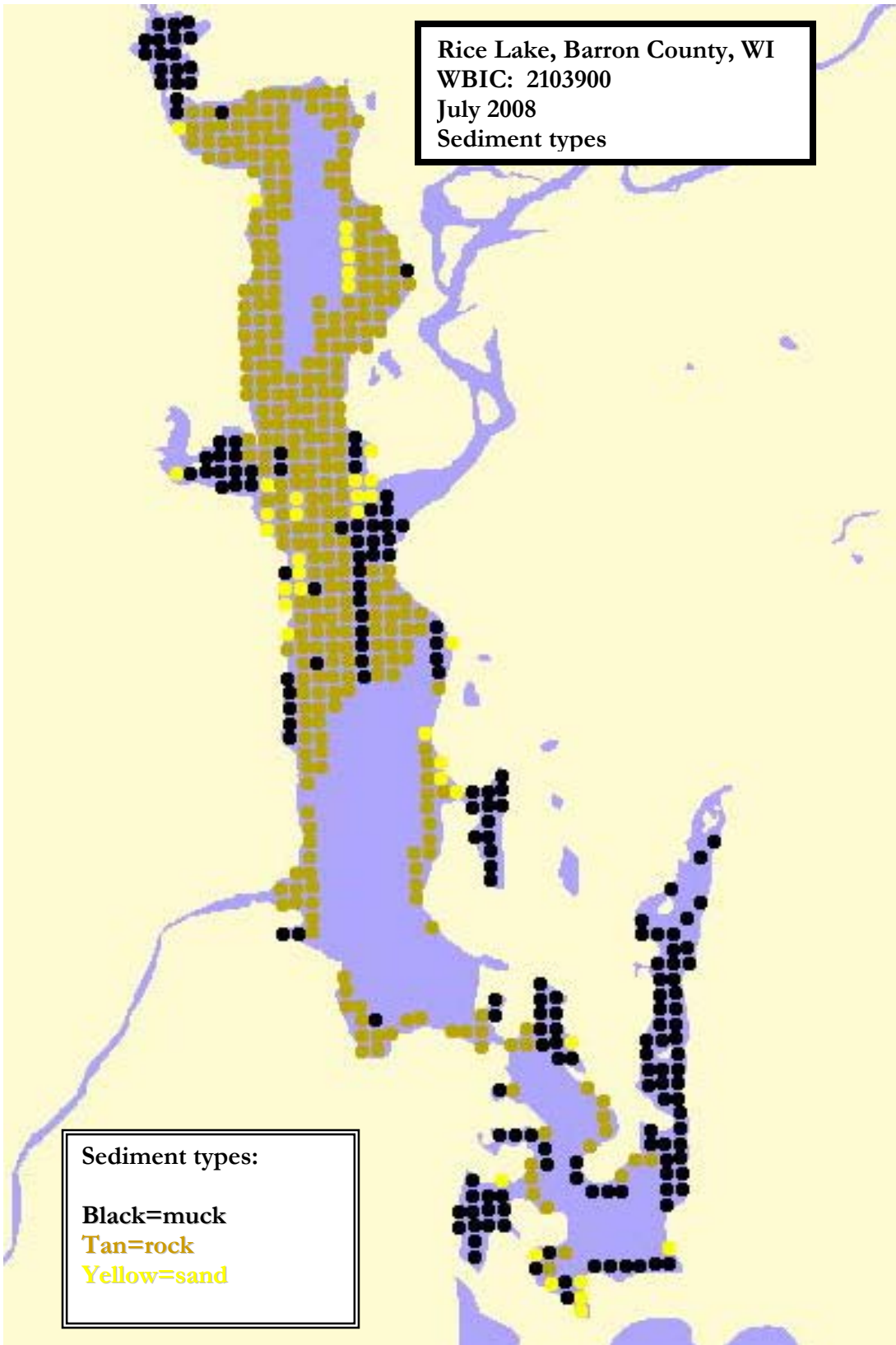
Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Sediment types



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Sparganium eurycarpum
Common bur-reed

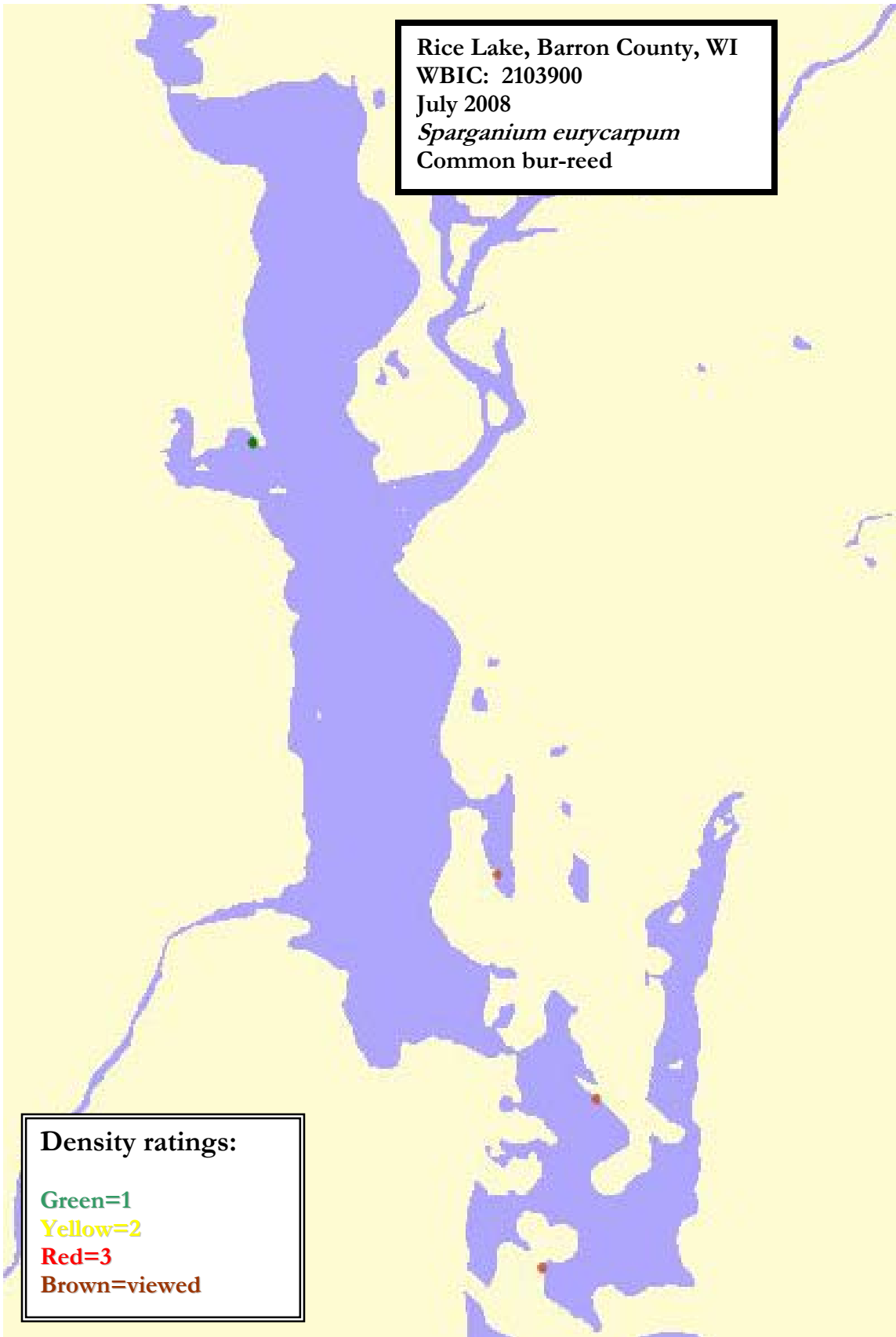
Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Spirodela polyrhiza
Large duckweed

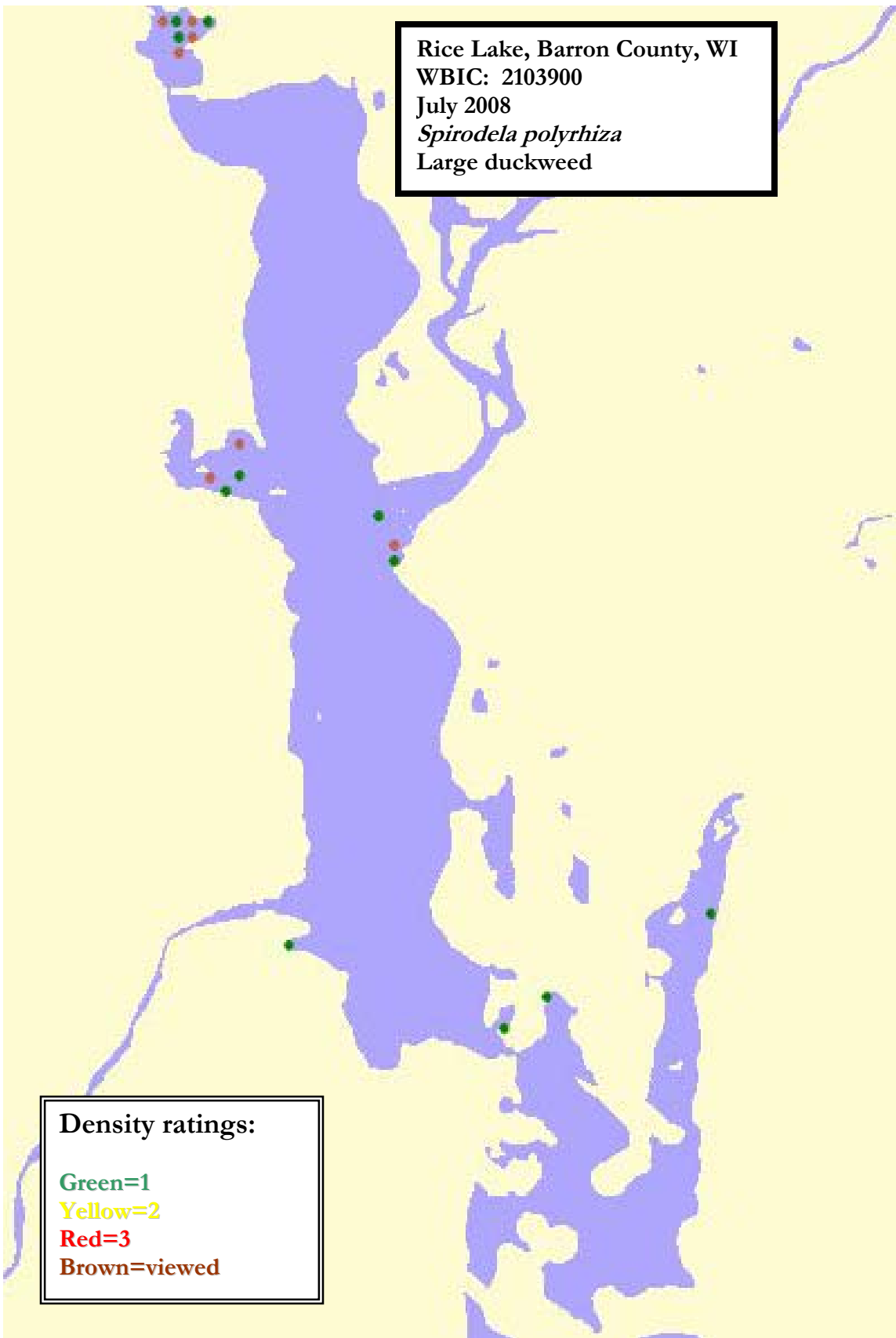
Density ratings:

Green=1

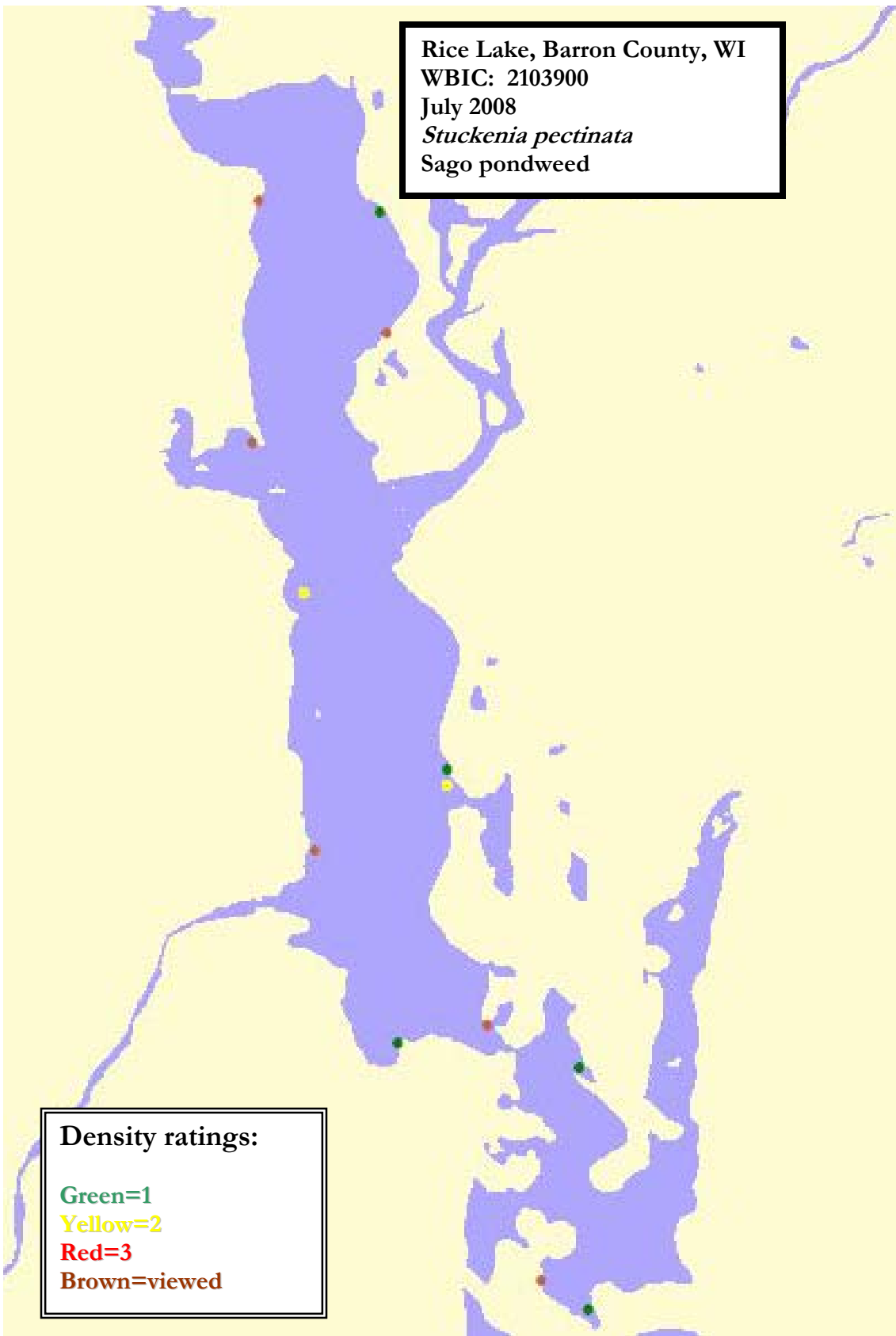
Yellow=2

Red=3

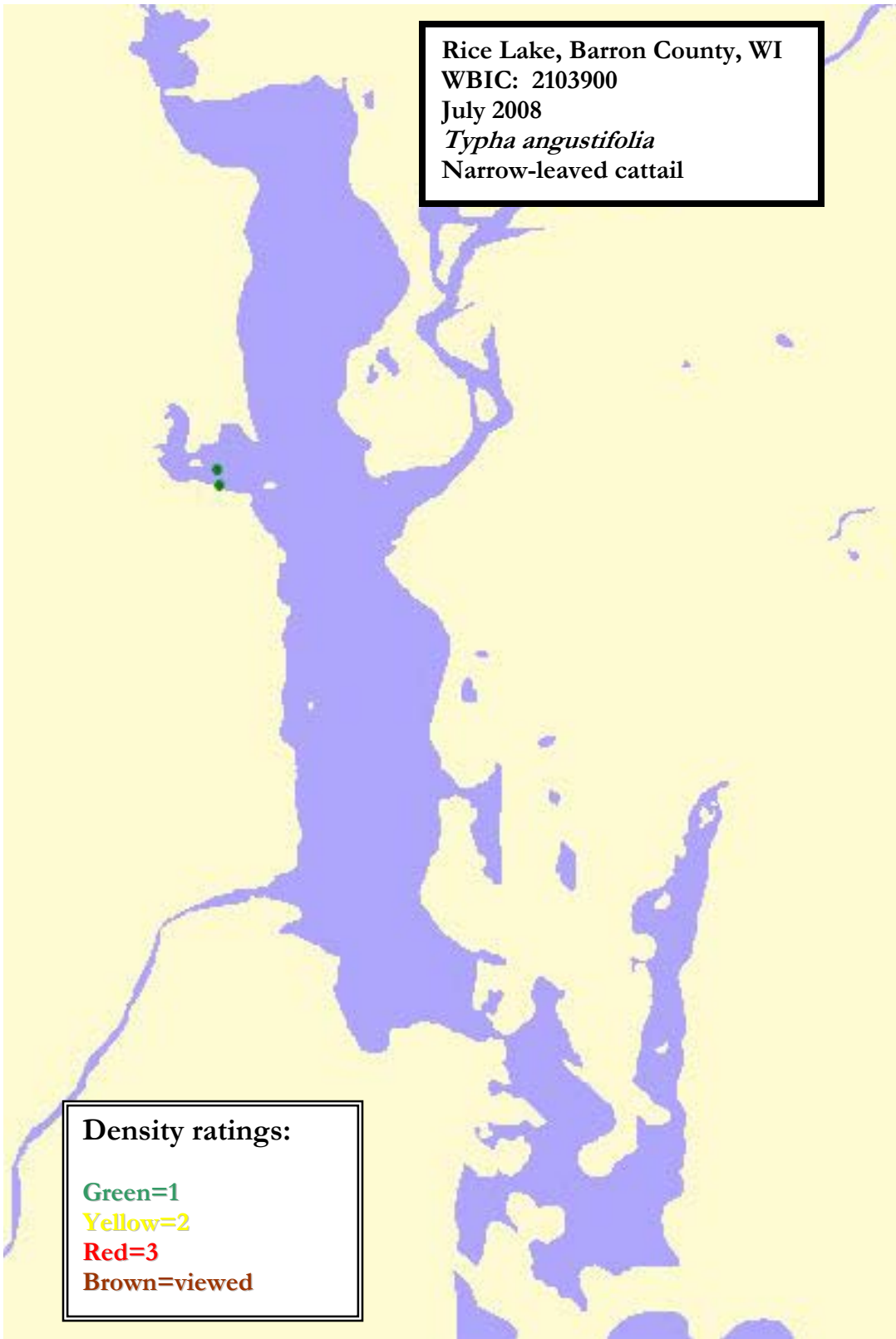
Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Stuckenia pectinata
Sago pondweed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Typha angustifolia
Narrow-leaved cattail



Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed

Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Typha latifolia
Broad leaved cattail

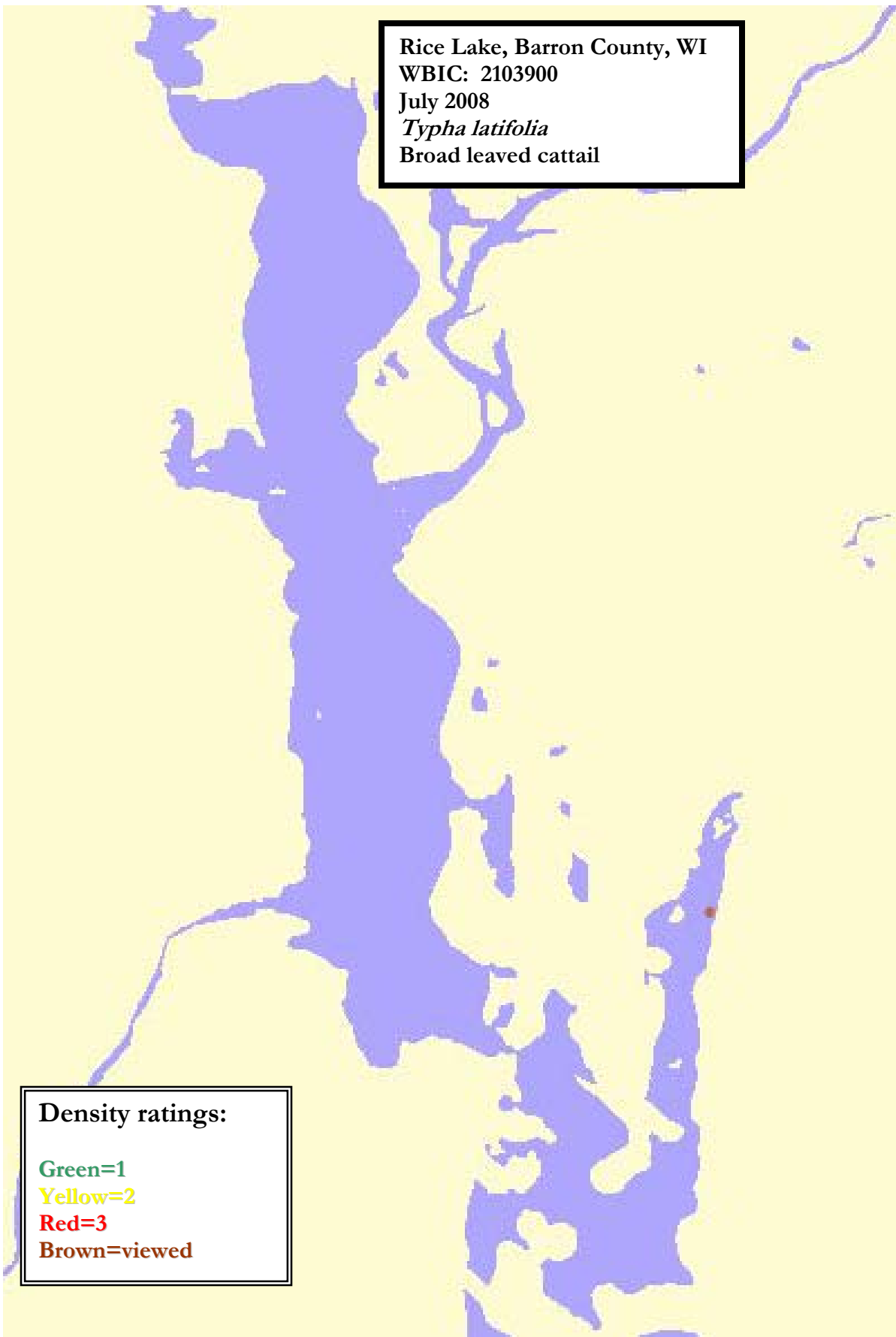
Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Utricularia gibba
Creeping bladderwort

Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Utricularia vulgaris
Common bladderwort

Density ratings:

Green=1

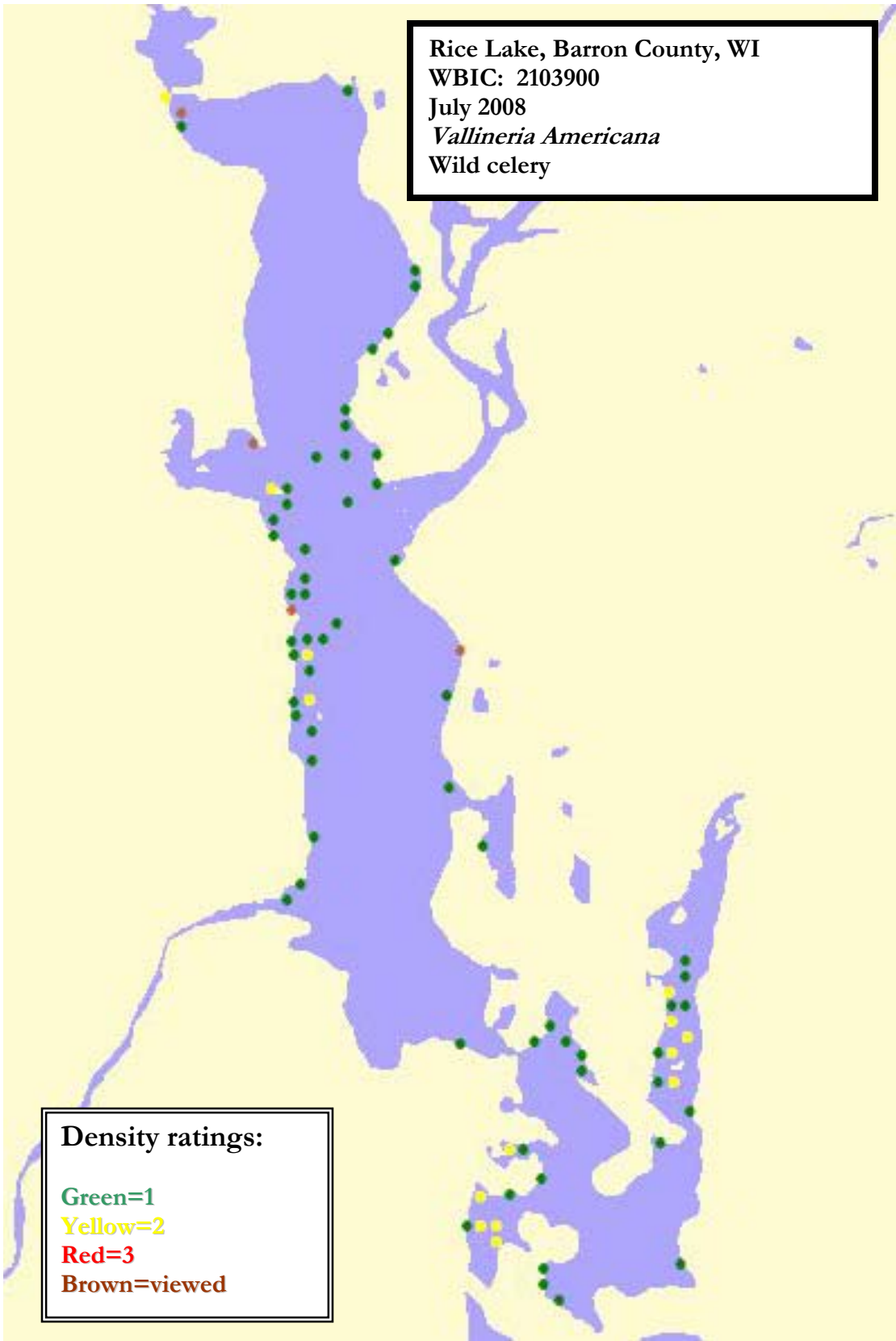
Yellow=2

Red=3

Brown=viewed



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Vallisneria Americana
Wild celery



Rice Lake, Barron County, WI
WBIC: 2103900
July 2008
Wolffia columbiana
Common watermeal

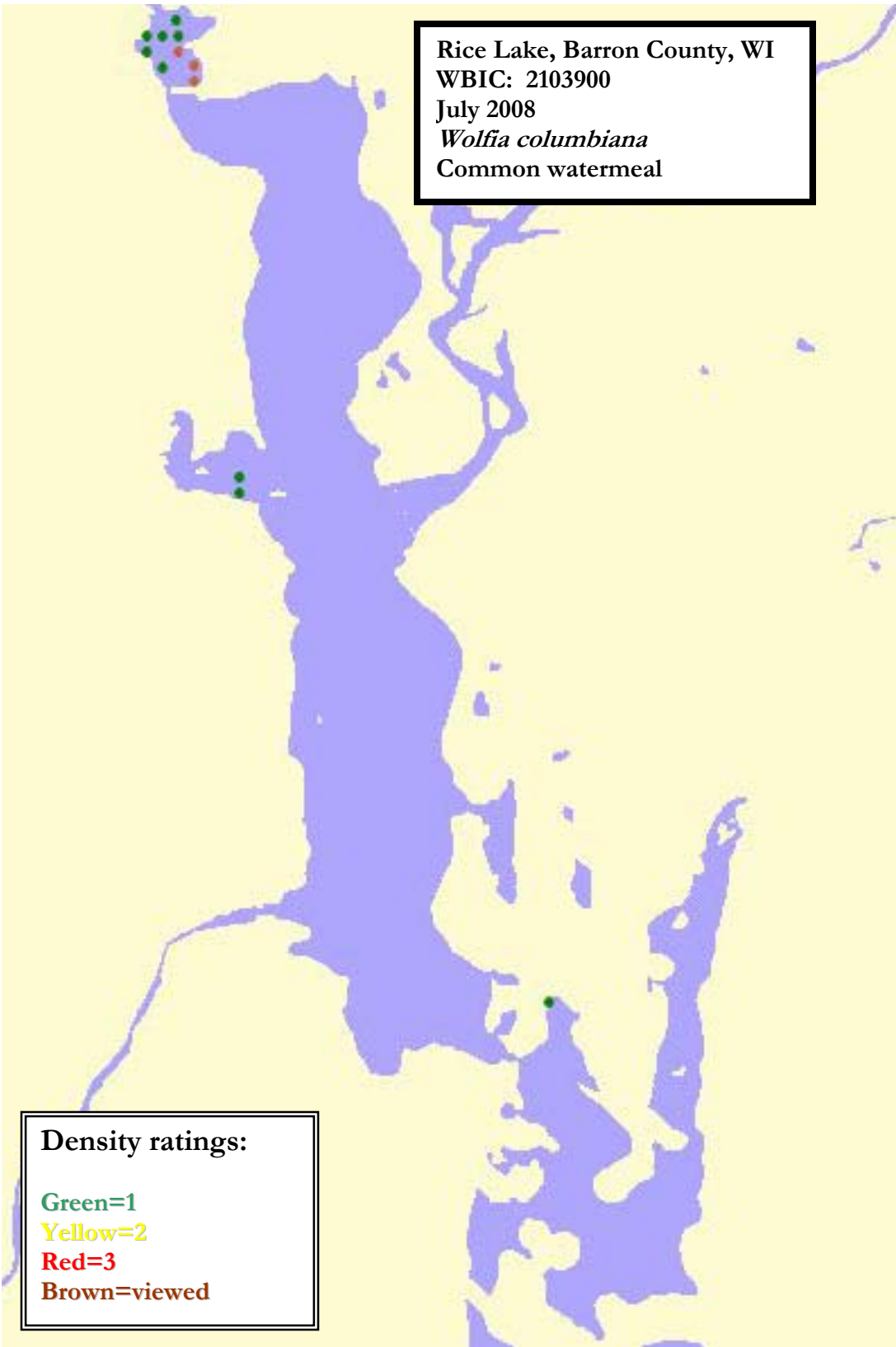
Density ratings:

Green=1

Yellow=2

Red=3

Brown=viewed



SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SEDIMENT	AQUATIC_MO
800	45.48899279	-91.71054593	5038082.2479	600760.4163	14	M/S	1

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SEDIMENT	ASCLEPIAS_
660	45.50268940	-91.71915304	5039593.1345	600063.5774	2	M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	BRASENIA_S
808	45.49764230	-91.70998872	5039043.8774	600788.5254	4	M	1
829	45.49823037	-91.70918737	5039110.2159	600850.0847	3	M	1
806	45.49936975	-91.71004103	5039235.7256	600781.3562	2	M	v
836	45.50054589	-91.70843825	5039368.4032	600904.4760	3	M	v
843	45.50113395	-91.70763684	5039434.7419	600966.0355	3	M	v

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SEDIMENT	CALLA_PALU
648	45.50037381	-91.71990174	5039334.9476	600009.1871	2	M	V
660	45.50268940	-91.71915304	5039593.1345	600063.5774	2	M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SEDIMENT	CAREX_COMO
660	45.50268940	-91.71915304	5039593.1345	600063.5774	2	M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SEDIMENT	CAREX_SP.
771	45.49819358	-91.71164374	5039103.0473	600658.2367	4	M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	CERATOPHYL
1	45.53235867	-91.73808947	5042865.8824	598532.4076	2	M	1
2	45.53178286	-91.73807173	5042801.9333	598534.7984	2	M	1
3	45.53294694	-91.73728793	5042932.2218	598593.9652	3	M	1
4	45.53237113	-91.73727020	5042868.2726	598596.3558	2	M	1
5	45.53179533	-91.73725247	5042804.3246	598598.7465	2	M	1
6	45.53121952	-91.73723473	5042740.3755	598601.1380	2	M	1
14	45.53295940	-91.73646865	5042934.6126	598657.9135	4	M	1
21	45.52892877	-91.73634458	5042486.9733	598674.6500	5	S/R	1
24	45.51568524	-91.73593713	5041016.1567	598729.6312	3	M	1
25	45.53297185	-91.73564937	5042937.0030	598721.8618	4	M	1
26	45.53239605	-91.73563165	5042873.0550	598724.2530	4	M	1
28	45.53066863	-91.73557850	5042681.2088	598731.4259	8	M	1
30	45.52894122	-91.73552536	5042489.3637	598738.5982	7	R/S	1
31	45.52836541	-91.73550765	5042425.4146	598740.9887	7	R/M	1
33	45.51569769	-91.73511809	5041018.5473	598793.5804	2	M	1
34	45.53298430	-91.73483008	5042939.3941	598785.8109	7	R/M	1
37	45.52837786	-91.73468843	5042427.8057	598804.9375	7	R/M	1
38	45.52780206	-91.73467073	5042363.8578	598807.3280	7	R	1
40	45.51628593	-91.73431675	5041084.8852	598855.1388	3	M	1
41	45.51571013	-91.73429906	5041020.9374	598857.5288	2	M	1
44	45.52896611	-91.73388691	5042494.1455	598866.4953	8	R/M	1
50	45.51514676	-91.73346234	5040959.3791	598923.8678	2	M	1
51	45.52955435	-91.73308537	5042560.4847	598928.0533	9	R	1
58	45.52091726	-91.73282010	5041601.2558	598963.9127	9	R	1
60	45.51976564	-91.73278474	5041473.3578	598968.6935	8	R	1
61	45.51918984	-91.73276706	5041409.4099	598971.0840	8	R	1
62	45.51861403	-91.73274938	5041345.4609	598973.4744	7	R	1
63	45.51688661	-91.73269635	5041153.6152	598980.6451	2	R	1
64	45.51631080	-91.73267867	5041089.6662	598983.0357	7	R	1
69	45.52899097	-91.73224846	5042498.9265	598994.3923	9	R	1
70	45.52841517	-91.73223078	5042434.9785	598996.7831	9	R	1
71	45.52783936	-91.73221310	5042371.0295	598999.1740	9	R	1
73	45.52611194	-91.73216006	5042179.1834	599006.3466	4	S	1
74	45.52553614	-91.73214239	5042115.2355	599008.7367	7	R	1
75	45.52496033	-91.73212471	5042051.2864	599011.1276	8	R	1
87	45.51805065	-91.73191263	5041283.9029	599039.8137	11	R	1
91	45.51574742	-91.73184196	5041028.1082	599049.3745	6	R	1
92	45.51517161	-91.73182429	5040964.1593	599051.7650	2	S	1
93	45.51459580	-91.73180662	5040900.2103	599054.1555	3	R	1
94	45.51401999	-91.73178896	5040836.2614	599056.5452	4	S	1
95	45.51344419	-91.73177129	5040772.3136	599058.9356	3	S/R	1

96	45.49962478	-91.73134747	5039237.5446	599116.2927	4	R	1
98	45.49789735	-91.73129452	5039045.6983	599123.4610	3	M	1
121	45.51748726	-91.73107590	5041222.3444	599106.1528	13	R	1
123	45.51633564	-91.73104058	5041094.4465	599110.9333	11	M	1
124	45.51575983	-91.73102292	5041030.4976	599113.3236	9	M	1
125	45.51518403	-91.73100526	5040966.5497	599115.7139	3	R	1
126	45.51460822	-91.73098761	5040902.6008	599118.1035	4	R	1
129	45.51288079	-91.73093463	5040710.7541	599125.2746	4	R	1
131	45.51115337	-91.73088167	5040518.9085	599132.4443	2	S	1
133	45.50942595	-91.73082870	5040327.0629	599139.6150	2	S	1
134	45.50885014	-91.73081105	5040263.1141	599142.0047	3	R	1
135	45.50769852	-91.73077575	5040135.2163	599146.7842	3	M	1
137	45.50654690	-91.73074044	5040007.3186	599151.5646	4	M	1
140	45.50021300	-91.73054632	5039303.8828	599177.8513	3	R	1
146	45.52901581	-91.73061000	5042503.7079	599122.2901	11	R	1
176	45.51174159	-91.73008034	5040585.2474	599194.0036	3	S	1
180	45.50943835	-91.73000976	5040329.4519	599203.5634	4	R	1
181	45.50886255	-91.72999211	5040265.5041	599205.9538	4	R	1
186	45.50598350	-91.72990390	5039945.7599	599217.9029	2	R	1
187	45.50540769	-91.72988626	5039881.8110	599220.2926	5	R	1
188	45.50483188	-91.72986862	5039817.8622	599222.6823	6	R	1
190	45.50368026	-91.72983333	5039689.9646	599227.4626	10	R	1
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193	45.50195284	-91.72978042	5039498.1193	599234.6312	5	R	1
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198	45.49907379	-91.72969223	5039178.3754	599246.5799	13	R	1
199	45.49849798	-91.72967460	5039114.4266	599248.9690	11	R	1
200	45.49792217	-91.72965696	5039050.4779	599251.3590	6	R	1
201	45.53017984	-91.72982609	5042633.9966	599181.4566	7	R	1
225	45.51636046	-91.72940250	5041099.2272	599238.8301	10	M/R	1
226	45.51578465	-91.72938485	5041035.2782	599241.2209	9	M/R	1
228	45.51463304	-91.72934957	5040907.3815	599246.0011	7	M/R	1
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231	45.51290561	-91.72929665	5040715.5348	599253.1714	8	M/R	1
234	45.51117818	-91.72924373	5040523.6881	599260.3419	4	M	1
235	45.51060238	-91.72922609	5040459.7403	599262.7321	8	M/R	1
237	45.50945076	-91.72919082	5040331.8426	599267.5118	3	R	1
238	45.50887495	-91.72917318	5040267.8937	599269.9021	5	R	1
239	45.50829914	-91.72915554	5040203.9449	599272.2923	7	m/R	1
242	45.50657171	-91.72910264	5040012.0983	599279.4617	8	M/R	1
259	45.53019225	-91.72900684	5042636.3879	599245.4057	7	R	1
278	45.51925190	-91.72867163	5041421.3610	599290.8276	10	M/R	1
279	45.51867610	-91.72865399	5041357.4132	599293.2182	9	M/R	1

283	45.51637286	-91.72858345	5041101.6174	599302.7793	8	R	1
284	45.51579705	-91.72856582	5041037.6685	599305.1692	7	M/R	1
285	45.51522124	-91.72854818	5040973.7195	599307.5599	4	M/R	1
288	45.51349382	-91.72849528	5040781.8739	599314.7306	6	M/R	1
289	45.51291801	-91.72847765	5040717.9250	599317.1206	7	M/R	1
290	45.51234220	-91.72846002	5040653.9761	599319.5106	7	M/R	1
291	45.51176639	-91.72844239	5040590.0272	599321.9006	8	M/R	1
292	45.51119058	-91.72842476	5040526.0784	599324.2907	9	M/R	1
293	45.51061477	-91.72840713	5040462.1295	599326.6808	9	M/R	1
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296	45.50888735	-91.72835424	5040270.2840	599333.8511	8	M/R	1
297	45.50831154	-91.72833661	5040206.3351	599336.2412	7	M/R	1
298	45.50773573	-91.72831899	5040142.3863	599338.6306	10	M/R	1
299	45.50715992	-91.72830136	5040078.4375	599341.0208	11	M/R	1
318	45.49621953	-91.72796656	5038863.4106	599386.4245	2	M/R	1
320	45.49506791	-91.72793133	5038735.5131	599391.2033	8	M/R	1
322	45.52962884	-91.72816996	5042574.8295	599311.7449	9	R	1
340	45.51926430	-91.72785254	5041423.7519	599354.7766	7	R	1
341	45.51868849	-91.72783492	5041359.8029	599357.1663	6	M/R	1
342	45.51811268	-91.72781729	5041295.8539	599359.5568	5	R	1
344	45.51696107	-91.72778203	5041167.9572	599364.3378	5	M/R	1
345	45.51638526	-91.72776440	5041104.0083	599366.7284	4	M/R	1
346	45.51580945	-91.72774678	5041040.0593	599369.1182	3	M/R	1
347	45.51523364	-91.72772915	5040976.1104	599371.5087	3	M/R	1
348	45.51465783	-91.72771153	5040912.1615	599373.8986	2	M/R	1
349	45.51408202	-91.72769390	5040848.2126	599376.2892	3	M/R	1
350	45.51350621	-91.72767628	5040784.2637	599378.6791	5	M	1
351	45.51293040	-91.72765866	5040720.3148	599381.0689	6	M/R	1
352	45.51235459	-91.72764103	5040656.3659	599383.4596	7	M/R	1
353	45.51177879	-91.72762341	5040592.4181	599385.8495	8	M/R	1
354	45.51120298	-91.72760579	5040528.4692	599388.2394	9	M/R	1
355	45.51062717	-91.72758817	5040464.5204	599390.6294	9	M/R	1
384	45.49392867	-91.72707738	5038610.0045	599459.9309	8	M/R	1
385	45.49335286	-91.72705977	5038546.0558	599462.3206	6	M/R	1
387	45.52964123	-91.72735072	5042577.2199	599375.6938	7	R	1
388	45.52906543	-91.72733309	5042513.2719	599378.0846	8	R	1
389	45.52848962	-91.72731546	5042449.3229	599380.4754	9	R	1
390	45.52791381	-91.72729783	5042385.3738	599382.8663	9	R	1
394	45.52561058	-91.72722732	5042129.5788	599392.4290	11	R	1
401	45.52157992	-91.72710394	5041681.9370	599409.1636	9	R	1
403	45.52042831	-91.72706870	5041554.0401	599413.9441	8	R	1
405	45.51639765	-91.72694536	5041106.3987	599430.6767	3	M	1
407	45.51524603	-91.72691012	5040978.5008	599435.4576	2	S	1

410	45.51351860	-91.72685727	5040786.6541	599442.6283	3	M	1
411	45.51294279	-91.72683966	5040722.7052	599445.0180	6	M	1
413	45.51179117	-91.72680443	5040594.8075	599449.7984	8	M	1
414	45.51121536	-91.72678682	5040530.8586	599452.1882	8	M	1
445	45.49336524	-91.72624106	5038548.4453	599526.2693	6	M/R	1
446	45.52907782	-91.72651386	5042515.6629	599442.0334	6	M/R	1
447	45.52562297	-91.72640814	5042131.9698	599456.3778	7	R	1
448	45.52504716	-91.72639052	5042068.0208	599458.7686	10	M/R	1
453	45.52216812	-91.72630244	5041748.2770	599470.7213	9	M/R	1
454	45.52159231	-91.72628482	5041684.3280	599473.1123	8	M/R	1
455	45.52101650	-91.72626721	5041620.3790	599475.5024	7	M/R	1
459	45.51468260	-91.72607349	5040916.9419	599501.7960	2	S/M	1
463	45.51237936	-91.72600306	5040661.1463	599511.3568	6	M	1
464	45.51180355	-91.72598545	5040597.1974	599513.7472	7	M/R	1
465	45.51122774	-91.72596785	5040533.2486	599516.1369	8	M/R	1
466	45.51065193	-91.72595024	5040469.2997	599518.5274	9	M/R	1
467	45.51007612	-91.72593264	5040405.3508	599520.9171	9	M/R	1
496	45.52563535	-91.72558896	5042134.3604	599520.3266	4	R	1
501	45.52275631	-91.72550091	5041814.6165	599532.2801	7	M/R	1
503	45.52160469	-91.72546570	5041686.7186	599537.0609	7	M/R	1
509	45.51239174	-91.72518407	5040663.5369	599575.3057	4	M	1
543	45.52334449	-91.72469937	5041880.9556	599593.8384	7	M/R	1
545	45.52219287	-91.72466418	5041753.0576	599598.6189	7	M/R	1
546	45.51355573	-91.72440026	5040793.8249	599634.4744	3	M	1
547	45.51067668	-91.72431231	5040474.0805	599646.4253	7	M/R	1
578	45.51011323	-91.72347577	5040412.5214	599712.7639	8	M/R	1
579	45.50953742	-91.72345819	5040348.5726	599715.1541	10	M/R	1
586	45.50550674	-91.72333516	5039900.9297	599731.8831	9	S/M	1
587	45.50493093	-91.72331758	5039836.9809	599734.2734	8	M/R	1
592	45.50205187	-91.72322972	5039517.2359	599746.2219	8	M/R	1
593	45.50147606	-91.72321215	5039453.2872	599748.6114	8	M/R	1
602	45.50954978	-91.72263924	5040350.9629	599779.1031	8	M	1
606	45.50724653	-91.72256897	5040095.1665	599788.6625	2	R	1
607	45.50436747	-91.72248113	5039775.4215	599800.6123	2	S/M	1
608	45.50379166	-91.72246357	5039711.4727	599803.0017	3	S/M	1
617	45.48709310	-91.72195441	5037856.9528	599872.2957	2	M	1
618	45.48651729	-91.72193687	5037793.0042	599874.6841	3	M	1
628	45.48768126	-91.72115333	5037923.2915	599933.8554	3	M	1
629	45.48710544	-91.72113579	5037859.3418	599936.2444	3	M	1
630	45.48652963	-91.72111825	5037795.3932	599938.6334	3	M	1
632	45.48537800	-91.72108317	5037667.4949	599943.4115	4	M	1
633	45.50324054	-91.72080829	5039652.3034	599933.2895	2	M	1
639	45.49345173	-91.72051006	5038565.1708	599973.9118	9	M/R	1

640	45.48769359	-91.72033470	5037925.6800	599997.8042	3	M	1
641	45.48711778	-91.72031717	5037861.7314	600000.1931	3	M	1
642	45.48654196	-91.72029963	5037797.7817	600002.5828	2	M	1
646	45.50152544	-91.71993682	5039462.8462	600004.4074	3	M	1
648	45.50037381	-91.71990174	5039334.9476	600009.1871	2	M	1
649	45.49979800	-91.71988420	5039270.9989	600011.5771	3	m	1
651	45.49461568	-91.71972640	5038695.4573	600033.0824	2	M	1
653	45.49000918	-91.71958617	5038183.8659	600052.1966	2	M	1
656	45.48713011	-91.71949854	5037864.1206	600064.1425	5	M	1
660	45.50268940	-91.71915304	5039593.1345	600063.5774	2	M	1
664	45.49174894	-91.71882006	5038378.1015	600108.9781	5	R/S	1
667	45.49406452	-91.71807142	5038636.2877	600163.3698	3	R	1
674	45.48888219	-91.71791382	5038060.7455	600184.8728	8	R	1
676	45.48773056	-91.71787880	5037932.8472	600189.6513	11	M/R	1
677	45.48542730	-91.71780877	5037677.0507	600199.2077	2	S	1
678	45.48485149	-91.71779126	5037613.1021	600201.5971	3	M/S	1
679	45.49580428	-91.71730521	5038830.5247	600220.1508	2	M	1
680	45.49522846	-91.71728771	5038766.5749	600222.5397	3	M	1
689	45.49004613	-91.71713017	5038191.0327	600244.0437	2	R	1
695	45.48543961	-91.71699017	5037679.4396	600263.1567	7	M	1
698	45.49524077	-91.71646896	5038768.9645	600286.4893	2	M	1
718	45.49294982	-91.71558026	5038515.5578	600359.9960	2	M	1
732	45.48431259	-91.71531800	5037556.3200	600395.8334	8	S	1
733	45.48373677	-91.71530052	5037492.3704	600398.2224	6	S	1
734	45.48316096	-91.71528304	5037428.4218	600400.6114	5	S	1
745	45.48490070	-91.71451689	5037622.6583	600457.3932	13	M	1
762	45.48896826	-91.71218324	5038077.4703	600632.5178	13	M/R	1
771	45.49819358	-91.71164374	5039103.0473	600658.2367	4	M	1
772	45.49761777	-91.71162629	5039039.0986	600660.6262	12	M	1
773	45.49358706	-91.71150415	5038591.4537	600677.3523	3	M	1
774	45.49301124	-91.71148670	5038527.5040	600679.7419	4	M	1
776	45.49185961	-91.71145181	5038399.6056	600684.5204	5	M	1
777	45.49013216	-91.71139947	5038207.7576	600691.6888	5	M	1
778	45.48955634	-91.71138203	5038143.8079	600694.0777	6	M	1
779	45.48898053	-91.71136459	5038079.8593	600696.4667	12	r	1
790	45.49647840	-91.71077262	5038913.5887	600729.3550	4	M	1
791	45.49590259	-91.71075518	5038849.6401	600731.7444	5	M	1
792	45.49532677	-91.71073774	5038785.6903	600734.1338	2	M	1
793	45.49475096	-91.71072030	5038721.7417	600736.5232	3	M	1
794	45.49417514	-91.71070286	5038657.7920	600738.9127	4	M	1
795	45.49359932	-91.71068542	5038593.8422	600741.3022	4	M	1
796	45.49244769	-91.71065055	5038465.9439	600746.0804	3	M	1
798	45.49129606	-91.71061567	5038338.0456	600750.8595	5	M	1

800	45.48899279	-91.71054593	5038082.2479	600760.4163	14	M/S	1
801	45.48841698	-91.71052850	5038018.2993	600762.8052	15	M	1
802	45.48784116	-91.71051107	5037954.3496	600765.1940	16	M/S	1
803	45.48726534	-91.71049363	5037890.4000	600767.5837	15	M/S	1
809	45.49706648	-91.70997129	5038979.9276	600790.9147	2	M	1
810	45.49649067	-91.70995386	5038915.9790	600793.3039	2	M	1
814	45.49418740	-91.70988413	5038660.1811	600802.8619	5	M	1
815	45.49361159	-91.70986670	5038596.2325	600805.2513	5	M	1
819	45.49130832	-91.70979698	5038340.4348	600814.8088	5	M/S	1
820	45.49073250	-91.70977956	5038276.4851	600817.1975	7	M	1
821	45.49015669	-91.70976213	5038212.5365	600819.5870	7	M	1
823	45.48900505	-91.70972728	5038084.6371	600824.3651	9	M	1
824	45.48842924	-91.70970985	5038020.6885	600826.7546	11	M	1
829	45.49823037	-91.70918737	5039110.2159	600850.0847	3	M	1
832	45.49650292	-91.70913509	5038918.3677	600857.2536	4	M	1
7	45.53064372	-91.73721700	5042676.4275	598603.5287	2	M	2
15	45.53238359	-91.73645092	5042870.6635	598660.3048	4	M	2
16	45.53180779	-91.73643320	5042806.7155	598662.6954	6	M	2
17	45.53123198	-91.73641548	5042742.7664	598665.0860	6	M	2
29	45.52951702	-91.73554307	5042553.3117	598736.2077	5	R/S	2
36	45.52895367	-91.73470614	5042491.7548	598802.5463	7	R/M	2
49	45.51572256	-91.73348003	5041023.3270	598921.4771	1	M	2
65	45.51573499	-91.73266099	5041025.7173	598985.4262	2	M	2
67	45.53014258	-91.73228382	5042626.8235	598989.6108	6	R	2
127	45.51403241	-91.73096995	5040838.6519	599120.4938	5	R	2
128	45.51345660	-91.73095229	5040774.7030	599122.8842	4	R	2
130	45.51172918	-91.73089932	5040582.8574	599130.0546	3	M	2
138	45.50597109	-91.73072279	5039943.3698	599153.9544	5	M	2
139	45.50539528	-91.73070514	5039879.4210	599156.3443	4	M	2
143	45.49790976	-91.73047574	5039048.0877	599187.4100	4	M	2
175	45.51231740	-91.73009799	5040649.1963	599191.6133	5	S	2
179	45.51001416	-91.73002740	5040393.4008	599201.1738	5	R	2
183	45.50771093	-91.72995683	5040137.6064	599210.7330	4	R	2
233	45.51175399	-91.72926137	5040587.6370	599257.9517	9	M/R	2
236	45.51002657	-91.72920845	5040395.7915	599265.1223	5	M/R	2
295	45.50946316	-91.72837187	5040334.2329	599331.4610	7	M/R	2
343	45.51753687	-91.72779966	5041231.9050	599361.9473	6	M/R	2
404	45.51697345	-91.72696298	5041170.3465	599428.2863	3	M	2
406	45.51582184	-91.72692774	5041042.4497	599433.0671	2	M	2
409	45.51409441	-91.72687489	5040850.6030	599440.2378	2	S/M	2
412	45.51236698	-91.72682204	5040658.7563	599447.4086	7	M	2
456	45.52044069	-91.72624959	5041556.4301	599477.8934	5	M/R	2
457	45.51641003	-91.72612631	5041108.7886	599494.6258	2	S	2

460	45.51410679	-91.72605588	5040852.9930	599504.1864	3	M	2
507	45.51354336	-91.72521926	5040791.4347	599570.5260	2	M	2
541	45.52449611	-91.72473457	5042008.8536	599589.0572	5	R	2
544	45.52276868	-91.72468177	5041817.0066	599596.2290	6	M/R	2
576	45.52335686	-91.72388023	5041883.3463	599657.7867	2	M	2
577	45.52278105	-91.72386263	5041819.3974	599660.1779	5	M/R	2
631	45.48595381	-91.72110071	5037731.4435	599941.0225	5	M	2
635	45.50151310	-91.72075565	5039460.4560	599940.4586	2	M	2
643	45.50325288	-91.71998943	5039654.6935	599997.2386	2	M	2
644	45.50267707	-91.71997189	5039590.7448	599999.6284	4	M	2
645	45.50210125	-91.71995435	5039526.7949	600002.0183	2	M	2
650	45.49519150	-91.71974393	5038759.4071	600030.6931	2	M	2
658	45.50384102	-91.71918810	5039721.0320	600058.7981	2	M	2
673	45.49003382	-91.71794883	5038188.6439	600180.0952	3	M	2
681	45.49465265	-91.71727020	5038702.6263	600224.9294	2	M	2
683	45.49350102	-91.71723519	5038574.7279	600229.7081	9	M	2
699	45.49466496	-91.71645146	5038705.0158	600288.8789	2	M	2
775	45.49243542	-91.71146925	5038463.5542	600682.1316	4	M	2
799	45.48956861	-91.71056337	5038146.1976	600758.0267	9	M	2
808	45.49764230	-91.70998872	5039043.8774	600788.5254	4	M	2
811	45.49591485	-91.70993643	5038852.0292	600795.6932	4	M	2
812	45.49533903	-91.70991899	5038788.0795	600798.0833	4	M	2
818	45.49188414	-91.70981441	5038404.3845	600812.4194	4	M	2
822	45.48958087	-91.70974470	5038148.5868	600821.9764	7	M	2
831	45.49707874	-91.70915252	5038982.3174	600854.8637	3	M	2
836	45.50054589	-91.70843825	5039368.4032	600904.4760	3	M	2
843	45.50113395	-91.70763684	5039434.7419	600966.0355	3	M	2
18	45.53065618	-91.73639775	5042678.8184	598667.4773	4	M	3
19	45.53008038	-91.73638003	5042614.8704	598669.8679	3	M	3
20	45.52950457	-91.73636231	5042550.9212	598672.2585	4	M	3
27	45.53124444	-91.73559622	5042745.1579	598729.0347	4	M	3
39	45.51686174	-91.73433445	5041148.8342	598852.7480	3	M	3
43	45.52954191	-91.73390461	5042558.0934	598864.1043	8	M	3
47	45.51687418	-91.73351540	5041151.2249	598916.6966	4	M	3
48	45.51629837	-91.73349771	5041087.2759	598919.0872	3	M	3
66	45.51515919	-91.73264332	5040961.7694	598987.8160	3	M	3
141	45.49963719	-91.73052867	5039239.9340	599180.2414	6	R	3
173	45.51346901	-91.73013329	5040777.0930	599186.8328	7	R	3
174	45.51289321	-91.73011564	5040713.1452	599189.2230	3	R	3
182	45.50828674	-91.72997447	5040201.5553	599208.3434	5	R	3
321	45.53020465	-91.72818759	5042638.7786	599309.3547	7	M/R	3
461	45.51353098	-91.72603827	5040789.0441	599506.5768	5	M	3
462	45.51295517	-91.72602066	5040725.0952	599508.9672	6	M	3

508	45.51296755	-91.72520167	5040727.4858	599572.9155	3	M	3
609	45.50321585	-91.72244600	5039647.5239	599805.3919	4	R	3
634	45.50266473	-91.72079074	5039588.3546	599935.6794	2	M	3
647	45.50094963	-91.71991928	5039398.8974	600006.7972	3	M	3
659	45.50326521	-91.71917057	5039657.0833	600061.1877	3	M	3
682	45.49407683	-91.71725269	5038638.6765	600227.3191	7	M	3
700	45.49408914	-91.71643397	5038641.0660	600291.2677	5	M	3
701	45.49351333	-91.71641647	5038577.1174	600293.6573	7	M	3
702	45.49293751	-91.71639897	5038513.1676	600296.0469	2	M	3
715	45.48430029	-91.71613659	5037553.9309	600331.8839	8	M	3
716	45.48372447	-91.71611910	5037489.9813	600334.2730	4	M	3
786	45.48494981	-91.71124250	5037632.2139	600713.1907	10	M	3
789	45.49763004	-91.71080751	5039041.4882	600724.5754	4	M	3
797	45.49187188	-91.71063311	5038401.9953	600748.4699	5	M	3
813	45.49476322	-91.70990156	5038724.1309	600800.4726	4	M	3
816	45.49303577	-91.70984927	5038532.2828	600807.6406	4	M	3
817	45.49245995	-91.70983184	5038468.3331	600810.0300	5	M	3
839	45.49881844	-91.70838600	5039176.5550	600911.6443	2	M	3
132	45.51057756	-91.73086401	5040454.9596	599134.8348	2	S	V
178	45.51058997	-91.73004505	5040457.3496	599198.7835	9	R	V
386	45.53021704	-91.72736835	5042641.1689	599373.3030	10	R	V

SAMPLE_PT	LAT	LONG	X	Y	DEPTH	SEDIMENT	CHARA_SP.
627	45.48825707	-91.72117087	5037987.2401	599931.4664	2	M	1
649	45.49979800	-91.71988420	5039270.9989	600011.5771	3	M	1
654	45.48828173	-91.71953359	5037992.0178	600059.3643	4	S	1
804	45.48553789	-91.71044134	5037698.5521	600774.7505	7	S	1
829	45.49823037	-91.70918737	5039110.2159	600850.0847	3	M	1
836	45.50054589	-91.70843825	5039368.4032	600904.4760	3	M	1

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	P. crispus
96	45.49962478	-91.73134747	5039237.54457	599116.29275	1
93	45.51459580	-91.73180662	5040900.21033	599054.15545	1
778	45.48955634	-91.71138203	5038143.80792	600694.07771	1
735	45.49181048	-91.71472659	5038390.04803	600428.72384	1
73	45.52611194	-91.73216006	5042179.18341	599006.34655	1
7	45.53064372	-91.73721700	5042676.42746	598603.52872	1
676	45.48773056	-91.71787880	5037932.84722	600189.65134	1
65	45.51573499	-91.73266099	5041025.71726	598985.42624	1
607	45.50436747	-91.72248113	5039775.42145	599800.61232	1
606	45.50724653	-91.72256897	5040095.16654	599788.66249	1
576	45.52335686	-91.72388023	5041883.34634	599657.78665	1
546	45.51355573	-91.72440026	5040793.82486	599634.47438	1
542	45.52392030	-91.72471697	5041944.90458	599591.44783	1
513	45.51008850	-91.72511368	5040407.74149	599584.86631	1
48	45.51629837	-91.73349771	5041087.27593	598919.08722	1
413	45.51179117	-91.72680443	5040594.80745	599449.79838	1
408	45.51467022	-91.72689251	5040914.55191	599437.84729	1
407	45.51524603	-91.72691012	5040978.50082	599435.45760	1
406	45.51582184	-91.72692774	5041042.44973	599433.06714	1
385	45.49335286	-91.72705977	5038546.05582	599462.32062	1
384	45.49392867	-91.72707738	5038610.00451	599459.93091	1
36	45.52895367	-91.73470614	5042491.75481	598802.54634	1
358	45.50889974	-91.72753531	5040272.67379	599397.79934	1
353	45.51177879	-91.72762341	5040592.41813	599385.84950	1
351	45.51293040	-91.72765866	5040720.31478	599381.06893	1
350	45.51350621	-91.72767628	5040784.26368	599378.67905	1
347	45.51523364	-91.72772915	5040976.11041	599371.50875	1
346	45.51580945	-91.72774678	5041040.05932	599369.11816	1
291	45.51176639	-91.72844239	5040590.02723	599321.90063	1
285	45.51522124	-91.72854818	5040973.71954	599307.55988	1
26	45.53239605	-91.73563165	5042873.05503	598724.25300	1
24	45.51568524	-91.73593713	5041016.15672	598729.63125	1
234	45.51117818	-91.72924373	5040523.68811	599260.34192	1
233	45.51175399	-91.72926137	5040587.63699	599257.95173	1
230	45.51348142	-91.72931429	5040779.48368	599250.78127	1
200	45.49792217	-91.72965696	5039050.47789	599251.35895	1
183	45.50771093	-91.72995683	5040137.60641	599210.73304	1
175	45.51231740	-91.73009799	5040649.19630	599191.61328	1
144	45.53016743	-91.73064533	5042631.60605	599117.50826	1
143	45.49790976	-91.73047574	5039048.08775	599187.40998	1
141	45.49963719	-91.73052867	5039239.93404	599180.24136	1

140	45.50021300	-91.73054632	5039303.88281	599177.85133	1
138	45.50597109	-91.73072279	5039943.36980	599153.95443	1
136	45.50712271	-91.73075809	5040071.26749	599149.17479	1
129	45.51288079	-91.73093463	5040710.75406	599125.27460	1
126	45.51460822	-91.73098761	5040902.60080	599118.10348	1
5	45.53179533	-91.73725247	5042804.32459	598598.74652	1
506	45.51411917	-91.72523686	5040855.38359	599568.13571	V
457	45.51641003	-91.72612631	5041108.78860	599494.62580	V
405	45.51639765	-91.72694536	5041106.39865	599430.67670	V
3	45.53294694	-91.73728793	5042932.22176	598593.96518	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SEDIMENT	COMARUM_PA
648	45.50037381	-91.71990174	5039334.9476	600009.1871	2	M	V
660	45.50268940	-91.71915304	5039593.1345	600063.5774	2	M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SEDIMENT	DECODON_VE
648	45.50037381	-91.71990174	5039334.9476	600009.1871	2	M	V

SAMPLE_PT	LAT	LONG	X	Y	DULICHIMUM_
836	45.50054589	-91.70843825	5039368.40321	600904.47599	V
839	45.49881844	-91.70838600	5039176.55497	600911.64430	V

SAMPLE_PT	LAT	LONG	X	Y	ELEOCHARIS
648	45.50037381	-91.71990174	5039334.94760	600009.18715	V
836	45.50054589	-91.70843825	5039368.40321	600904.47599	V
839	45.49881844	-91.70838600	5039176.55497	600911.64430	V
843	45.50113395	-91.70763684	5039434.74186	600966.03547	V

SAMPLE_PT	LAT	LONG	X	Y	ELODEA_CAN
3	45.53294694	-91.73728793	5042932.22176	598593.96518	3
14	45.53295940	-91.73646865	5042934.61263	598657.91351	3
6	45.53121952	-91.73723473	5042740.37547	598601.13801	2
20	45.52950457	-91.73636231	5042550.92125	598672.25855	2
25	45.53297185	-91.73564937	5042937.00305	598721.86182	2
28	45.53066863	-91.73557850	5042681.20879	598731.42590	2
385	45.49335286	-91.72705977	5038546.05582	599462.32062	2
405	45.51639765	-91.72694536	5041106.39865	599430.67670	2
408	45.51467022	-91.72689251	5040914.55191	599437.84729	2
460	45.51410679	-91.72605588	5040852.99297	599504.18637	2
509	45.51239174	-91.72518407	5040663.53693	599575.30575	2
641	45.48711778	-91.72031717	5037861.73141	600000.19310	2
683	45.49350102	-91.71723519	5038574.72787	600229.70807	2
795	45.49359932	-91.71068542	5038593.84222	600741.30220	2
832	45.49650292	-91.70913509	5038918.36769	600857.25364	2
1	45.53235867	-91.73808947	5042865.88239	598532.40762	1
2	45.53178286	-91.73807173	5042801.93325	598534.79844	1
4	45.53237113	-91.73727020	5042868.27261	598596.35585	1
5	45.53179533	-91.73725247	5042804.32459	598598.74652	1
7	45.53064372	-91.73721700	5042676.42746	598603.52872	1
17	45.53123198	-91.73641548	5042742.76635	598665.08595	1
18	45.53065618	-91.73639775	5042678.81836	598667.47732	1
19	45.53008038	-91.73638003	5042614.87036	598669.86792	1
24	45.51568524	-91.73593713	5041016.15672	598729.63125	1
29	45.52951702	-91.73554307	5042553.31170	598736.20766	1
30	45.52894122	-91.73552536	5042489.36371	598738.59817	1
34	45.53298430	-91.73483008	5042939.39413	598785.81089	1
37	45.52837786	-91.73468843	5042427.80573	598804.93754	1
39	45.51686174	-91.73433445	5041148.83416	598852.74796	1
49	45.51572256	-91.73348003	5041023.32698	598921.47713	1
66	45.51515919	-91.73264332	5040961.76942	598987.81602	1
73	45.52611194	-91.73216006	5042179.18341	599006.34655	1
92	45.51517161	-91.73182429	5040964.15925	599051.76498	1
94	45.51401999	-91.73178896	5040836.26139	599056.54515	1
95	45.51344419	-91.73177129	5040772.31359	599058.93564	1
96	45.49962478	-91.73134747	5039237.54457	599116.29275	1
105	45.52670017	-91.73135855	5042245.52285	599067.90405	1
126	45.51460822	-91.73098761	5040902.60080	599118.10348	1
128	45.51345660	-91.73095229	5040774.70297	599122.88421	1
133	45.50942595	-91.73082870	5040327.06294	599139.61495	1
134	45.50885014	-91.73081105	5040263.11406	599142.00469	1

135	45.50769852	-91.73077575	5040135.21633	599146.78422	1
137	45.50654690	-91.73074044	5040007.31864	599151.56460	1
139	45.50539528	-91.73070514	5039879.42097	599156.34427	1
146	45.52901581	-91.73061000	5042503.70791	599122.29010	1
170	45.51519644	-91.73018624	5040968.93975	599179.66207	1
175	45.51231740	-91.73009799	5040649.19630	599191.61328	1
180	45.50943835	-91.73000976	5040329.45188	599203.56340	1
182	45.50828674	-91.72997447	5040201.55527	599208.34340	1
183	45.50771093	-91.72995683	5040137.60641	599210.73304	1
184	45.50713512	-91.72993918	5040073.65757	599213.12348	1
185	45.50655931	-91.72992154	5040009.70872	599215.51316	1
186	45.50598350	-91.72990390	5039945.75988	599217.90286	1
187	45.50540769	-91.72988626	5039881.81105	599220.29258	1
189	45.50425607	-91.72985097	5039753.91341	599225.07285	1
193	45.50195284	-91.72978042	5039498.11929	599234.63124	1
199	45.49849798	-91.72967460	5039114.42664	599248.96900	1
225	45.51636046	-91.72940250	5041099.22717	599238.83011	1
227	45.51520884	-91.72936721	5040971.32932	599243.61099	1
230	45.51348142	-91.72931429	5040779.48368	599250.78127	1
237	45.50945076	-91.72919082	5040331.84259	599267.51179	1
238	45.50887495	-91.72917318	5040267.89373	599269.90206	1
239	45.50829914	-91.72915554	5040203.94488	599272.29233	1
242	45.50657171	-91.72910264	5040012.09834	599279.46172	1
278	45.51925190	-91.72867163	5041421.36100	599290.82762	1
285	45.51522124	-91.72854818	5040973.71954	599307.55988	1
286	45.51464544	-91.72853055	5040909.77173	599309.94982	1
287	45.51406963	-91.72851292	5040845.82281	599312.33979	1
290	45.51234220	-91.72846002	5040653.97612	599319.51059	1
293	45.51061477	-91.72840713	5040462.12948	599326.68077	1
342	45.51811268	-91.72781729	5041295.85394	599359.55679	1
343	45.51753687	-91.72779966	5041231.90500	599361.94731	1
347	45.51523364	-91.72772915	5040976.11041	599371.50875	1
350	45.51350621	-91.72767628	5040784.26368	599378.67905	1
351	45.51293040	-91.72765866	5040720.31478	599381.06893	1
353	45.51177879	-91.72762341	5040592.41813	599385.84950	1
358	45.50889974	-91.72753531	5040272.67379	599397.79934	1
384	45.49392867	-91.72707738	5038610.00451	599459.93091	1
388	45.52906543	-91.72733309	5042513.27192	599378.08460	1
389	45.52848962	-91.72731546	5042449.32288	599380.47543	1
404	45.51697345	-91.72696298	5041170.34647	599428.28629	1
406	45.51582184	-91.72692774	5041042.44973	599433.06714	1
407	45.51524603	-91.72691012	5040978.50082	599435.45760	1
409	45.51409441	-91.72687489	5040850.60301	599440.23779	1

410	45.51351860	-91.72685727	5040786.65412	599442.62830	1
411	45.51294279	-91.72683966	5040722.70522	599445.01805	1
446	45.52907782	-91.72651386	5042515.66290	599442.03338	1
456	45.52044069	-91.72624959	5041556.43007	599477.89335	1
457	45.51641003	-91.72612631	5041108.78860	599494.62580	1
458	45.51525841	-91.72609109	5040980.89078	599499.40644	1
463	45.51237936	-91.72600306	5040661.14630	599511.35680	1
504	45.52102888	-91.72544809	5041622.76961	599539.45172	1
507	45.51354336	-91.72521926	5040791.43470	599570.52596	1
545	45.52219287	-91.72466418	5041753.05763	599598.61891	1
546	45.51355573	-91.72440026	5040793.82486	599634.47438	1
576	45.52335686	-91.72388023	5041883.34634	599657.78665	1
577	45.52278105	-91.72386263	5041819.39737	599660.17793	1
606	45.50724653	-91.72256897	5040095.16654	599788.66249	1
607	45.50436747	-91.72248113	5039775.42145	599800.61232	1
618	45.48651729	-91.72193687	5037793.00422	599874.68409	1
627	45.48825707	-91.72117087	5037987.24014	599931.46643	1
628	45.48768126	-91.72115333	5037923.29152	599933.85541	1
629	45.48710544	-91.72113579	5037859.34180	599936.24442	1
630	45.48652963	-91.72111825	5037795.39320	599938.63344	1
632	45.48537800	-91.72108317	5037667.49490	599943.41154	1
640	45.48769359	-91.72033470	5037925.68002	599997.80423	1
642	45.48654196	-91.72029963	5037797.78172	600002.58278	1
643	45.50325288	-91.71998943	5039654.69355	599997.23860	1
645	45.50210125	-91.71995435	5039526.79493	600002.01828	1
648	45.50037381	-91.71990174	5039334.94760	600009.18715	1
649	45.49979800	-91.71988420	5039270.99888	600011.57706	1
650	45.49519150	-91.71974393	5038759.40705	600030.69312	1
652	45.49173662	-91.71963875	5038375.71287	600045.02916	1
653	45.49000918	-91.71958617	5038183.86585	600052.19664	1
654	45.48828173	-91.71953359	5037992.01778	600059.36430	1
656	45.48713011	-91.71949854	5037864.12058	600064.14254	1
657	45.48655429	-91.71948102	5037800.17087	600066.53131	1
658	45.50384102	-91.71918810	5039721.03201	600058.79805	1
673	45.49003382	-91.71794883	5038188.64388	600180.09521	1
679	45.49580428	-91.71730521	5038830.52474	600220.15083	1
681	45.49465265	-91.71727020	5038702.62629	600224.92942	1
695	45.48543961	-91.71699017	5037679.43958	600263.15675	1
696	45.48486380	-91.71697267	5037615.49102	600265.54595	1
697	45.48428798	-91.71695517	5037551.54135	600267.93519	1
699	45.49466496	-91.71645146	5038705.01580	600288.87890	1
700	45.49408914	-91.71643397	5038641.06602	600291.26771	1
701	45.49351333	-91.71641647	5038577.11738	600293.65730	1

716	45.48372447	-91.71611910	5037489.98125	600334.27304	1
717	45.49352563	-91.71559775	5038579.50643	600357.60652	1
718	45.49294982	-91.71558026	5038515.55779	600359.99599	1
734	45.48316096	-91.71528304	5037428.42183	600400.61140	1
772	45.49761777	-91.71162629	5039039.09864	600660.62620	1
773	45.49358706	-91.71150415	5038591.45369	600677.35230	1
774	45.49301124	-91.71148670	5038527.50396	600679.74193	1
775	45.49243542	-91.71146925	5038463.55424	600682.13158	1
776	45.49185961	-91.71145181	5038399.60563	600684.52045	1
777	45.49013216	-91.71139947	5038207.75763	600691.68875	1
778	45.48955634	-91.71138203	5038143.80792	600694.07771	1
789	45.49763004	-91.71080751	5039041.48825	600724.57542	1
790	45.49647840	-91.71077262	5038913.58872	600729.35498	1
791	45.49590259	-91.71075518	5038849.64008	600731.74438	1
792	45.49532677	-91.71073774	5038785.69033	600734.13381	1
793	45.49475096	-91.71072030	5038721.74169	600736.52324	1
794	45.49417514	-91.71070286	5038657.79196	600738.91271	1
797	45.49187188	-91.71063311	5038401.99528	600748.46994	1
798	45.49129606	-91.71061567	5038338.04557	600750.85949	1
799	45.48956861	-91.71056337	5038146.19758	600758.02668	1
800	45.48899279	-91.71054593	5038082.24790	600760.41631	1
806	45.49936975	-91.71004103	5039235.72562	600781.35623	1
808	45.49764230	-91.70998872	5039043.87741	600788.52542	1
809	45.49706648	-91.70997129	5038979.92764	600790.91467	1
810	45.49649067	-91.70995386	5038915.97899	600793.30392	1
811	45.49591485	-91.70993643	5038852.02923	600795.69320	1
813	45.49476322	-91.70990156	5038724.13086	600800.47259	1
815	45.49361159	-91.70986670	5038596.23251	600805.25127	1
816	45.49303577	-91.70984927	5038532.28278	600807.64064	1
817	45.49245995	-91.70983184	5038468.33307	600810.03003	1
818	45.49188414	-91.70981441	5038404.38447	600812.41942	1
819	45.49130832	-91.70979698	5038340.43476	600814.80885	1
820	45.49073250	-91.70977956	5038276.48505	600817.19751	1
822	45.48958087	-91.70974470	5038148.58679	600821.97643	1
831	45.49707874	-91.70915252	5038982.31744	600854.86372	1
836	45.50054589	-91.70843825	5039368.40321	600904.47599	1
839	45.49881844	-91.70838600	5039176.55497	600911.64430	1
843	45.50113395	-91.70763684	5039434.74186	600966.03547	1

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SEDIMENT	ELODEA_NUT
762	45.48896826	-91.71218324	5038077.4703	600632.5178	13	M/R	1
791	45.49590259	-91.71075518	5038849.6401	600731.7444	5	M	1

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	FILAMENTOU
4	45.53237113	-91.73727020	5042868.2726	598596.3558	2	M	1
6	45.53121952	-91.73723473	5042740.3755	598601.1380	2	M	1
13	45.51567279	-91.73675616	5041013.7668	598665.6828	2	S	1
26	45.53239605	-91.73563165	5042873.0550	598724.2530	4	M	1
34	45.53298430	-91.73483008	5042939.3941	598785.8109	7	R/M	1
48	45.51629837	-91.73349771	5041087.2759	598919.0872	3	M	1
50	45.51514676	-91.73346234	5040959.3791	598923.8678	2	M	1
66	45.51515919	-91.73264332	5040961.7694	598987.8160	3	M	1
93	45.51459580	-91.73180662	5040900.2103	599054.1555	3	R	1
94	45.51401999	-91.73178896	5040836.2614	599056.5452	4	S	1
95	45.51344419	-91.73177129	5040772.3136	599058.9356	3	S/R	1
125	45.51518403	-91.73100526	5040966.5497	599115.7139	3	R	1
129	45.51288079	-91.73093463	5040710.7541	599125.2746	4	R	1
133	45.50942595	-91.73082870	5040327.0629	599139.6150	2	S	1
134	45.50885014	-91.73081105	5040263.1141	599142.0047	3	R	1
169	45.51577225	-91.73020389	5041032.8887	599177.2719	10	R/M	1
176	45.51174159	-91.73008034	5040585.2474	599194.0036	3	S	1
178	45.51058997	-91.73004505	5040457.3496	599198.7835	9	R	1
179	45.51001416	-91.73002740	5040393.4008	599201.1738	5	R	1
198	45.49907379	-91.72969223	5039178.3754	599246.5799	13	R	1
234	45.51117818	-91.72924373	5040523.6881	599260.3419	4	M	1
321	45.53020465	-91.72818759	5042638.7786	599309.3547	7	M/R	1
348	45.51465783	-91.72771153	5040912.1615	599373.8986	2	M/R	1
386	45.53021704	-91.72736835	5042641.1689	599373.3030	10	R	1
387	45.52964123	-91.72735072	5042577.2199	599375.6938	7	R	1
404	45.51697345	-91.72696298	5041170.3465	599428.2863	3	M	1
408	45.51467022	-91.72689251	5040914.5519	599437.8473	2	S/M	1
448	45.52504716	-91.72639052	5042068.0208	599458.7686	10	M/R	1
507	45.51354336	-91.72521926	5040791.4347	599570.5260	2	M	1
592	45.50205187	-91.72322972	5039517.2359	599746.2219	8	M/R	1
607	45.50436747	-91.72248113	5039775.4215	599800.6123	2	S/M	1
608	45.50379166	-91.72246357	5039711.4727	599803.0017	3	S/M	1
609	45.50321585	-91.72244600	5039647.5239	599805.3919	4	R	1
618	45.48651729	-91.72193687	5037793.0042	599874.6841	3	M	1
620	45.50322820	-91.72162715	5039649.9139	599869.3403	2	S/M	1
628	45.48768126	-91.72115333	5037923.2915	599933.8554	3	M	1
634	45.50266473	-91.72079074	5039588.3546	599935.6794	2	M	1
646	45.50152544	-91.71993682	5039462.8462	600004.4074	3	M	1
652	45.49173662	-91.71963875	5038375.7129	600045.0292	3	M	1
653	45.49000918	-91.71958617	5038183.8659	600052.1966	2	M	1
680	45.49522846	-91.71728771	5038766.5749	600222.5397	3	M	1

681	45.49465265	-91.71727020	5038702.6263	600224.9294	2	M	1
774	45.49301124	-91.71148670	5038527.5040	600679.7419	4	M	1
789	45.49763004	-91.71080751	5039041.4882	600724.5754	4	M	1
790	45.49647840	-91.71077262	5038913.5887	600729.3550	4	M	1
793	45.49475096	-91.71072030	5038721.7417	600736.5232	3	M	1
797	45.49187188	-91.71063311	5038401.9953	600748.4699	5	M	1
818	45.49188414	-91.70981441	5038404.3845	600812.4194	4	M	1
822	45.48958087	-91.70974470	5038148.5868	600821.9764	7	M	1
135	45.50769852	-91.73077575	5040135.2163	599146.7842	3	M	2
679	45.49580428	-91.71730521	5038830.5247	600220.1508	2	M	2
130	45.51172918	-91.73089932	5040582.8574	599130.0546	3	M	3
131	45.51115337	-91.73088167	5040518.9085	599132.4443	2	S	3
132	45.51057756	-91.73086401	5040454.9596	599134.8348	2	S	3
2	45.53178286	-91.73807173	5042801.9333	598534.7984	2	M	V
15	45.53238359	-91.73645092	5042870.6635	598660.3048	4	M	V
28	45.53066863	-91.73557850	5042681.2088	598731.4259	8	M	V
829	45.49823037	-91.70918737	5039110.2159	600850.0847	3	M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	HETERANTHE
19	45.53008038	-91.73638003	5042614.8704	598669.8679	3	M	1
20	45.52950457	-91.73636231	5042550.9212	598672.2585	4	M	1
25	45.53297185	-91.73564937	5042937.0030	598721.8618	4	M	1
27	45.53124444	-91.73559622	5042745.1579	598729.0347	4	M	1
34	45.53298430	-91.73483008	5042939.3941	598785.8109	7	R/M	1
39	45.51686174	-91.73433445	5041148.8342	598852.7480	3	M	1
50	45.51514676	-91.73346234	5040959.3791	598923.8678	2	M	1
65	45.51573499	-91.73266099	5041025.7173	598985.4262	2	M	1
95	45.51344419	-91.73177129	5040772.3136	599058.9356	3	S/R	1
126	45.51460822	-91.73098761	5040902.6008	599118.1035	4	R	1
229	45.51405723	-91.72933193	5040843.4326	599248.3912	7	M/R	1
288	45.51349382	-91.72849528	5040781.8739	599314.7306	6	M/R	1
408	45.51467022	-91.72689251	5040914.5519	599437.8473	2	S/M	1
508	45.51296755	-91.72520167	5040727.4858	599572.9155	3	M	1
635	45.50151310	-91.72075565	5039460.4560	599940.4586	2	M	1
664	45.49174894	-91.71882006	5038378.1015	600108.9781	5	R/S	1
804	45.48553789	-91.71044134	5037698.5521	600774.7505	7	S	1
33	45.51569769	-91.73511809	5041018.5473	598793.5804	2	M	V
47	45.51687418	-91.73351540	5041151.2249	598916.6966	4	M	V
504	45.52102888	-91.72544809	5041622.7696	599539.4517	5	R	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SEDIMENT	HYDRODICTY
7	45.53064372	-91.73721700	5042676.4275	598603.5287	2	M	1
19	45.53008038	-91.73638003	5042614.8704	598669.8679	3	M	1
42	45.51513432	-91.73428137	5040956.9884	598859.9188	2	M	1
49	45.51572256	-91.73348003	5041023.3270	598921.4771	1	M	1
94	45.51401999	-91.73178896	5040836.2614	599056.5452	4	S	1
408	45.51467022	-91.72689251	5040914.5519	599437.8473	2	S/M	1
25	45.53297185	-91.73564937	5042937.0030	598721.8618	4	M	V
26	45.53239605	-91.73563165	5042873.0550	598724.2530	4	M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SEDIMENT	IRIS_VERSI
735	45.49181048	-91.71472659	5038390.0480	600428.7238	5	R	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SEDIMENT	JUNCUS_EFF
660	45.50268940	-91.71915304	5039593.1345	600063.5774	2	M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SEDIMENT	LEMNA_MINO
5	45.53179533	-91.73725247	5042804.3246	598598.7465	2	M	1
13	45.51567279	-91.73675616	5041013.7668	598665.6828	2	S	1
14	45.53295940	-91.73646865	5042934.6126	598657.9135	4	M	1
15	45.53238359	-91.73645092	5042870.6635	598660.3048	4	M	1
19	45.53008038	-91.73638003	5042614.8704	598669.8679	3	M	1
24	45.51568524	-91.73593713	5041016.1567	598729.6312	3	M	1
32	45.51627349	-91.73513579	5041082.4951	598791.1903	2	M	1
41	45.51571013	-91.73429906	5041020.9374	598857.5288	2	M	1
42	45.51513432	-91.73428137	5040956.9884	598859.9188	2	M	1
49	45.51572256	-91.73348003	5041023.3270	598921.4771	1	M	1
50	45.51514676	-91.73346234	5040959.3791	598923.8678	2	M	1
63	45.51688661	-91.73269635	5041153.6152	598980.6451	2	R	1
98	45.49789735	-91.73129452	5039045.6983	599123.4610	3	M	1
460	45.51410679	-91.72605588	5040852.9930	599504.1864	3	M	1
507	45.51354336	-91.72521926	5040791.4347	599570.5260	2	M	1
509	45.51239174	-91.72518407	5040663.5369	599575.3057	4	M	1
633	45.50324054	-91.72080829	5039652.3034	599933.2895	2	M	1
643	45.50325288	-91.71998943	5039654.6935	599997.2386	2	M	1
658	45.50384102	-91.71918810	5039721.0320	600058.7981	2	M	1
679	45.49580428	-91.71730521	5038830.5247	600220.1508	2	M	1
1	45.53235867	-91.73808947	5042865.8824	598532.4076	2	M	2
2	45.53178286	-91.73807173	5042801.9333	598534.7984	2	M	2
4	45.53237113	-91.73727020	5042868.2726	598596.3558	2	M	2
6	45.53121952	-91.73723473	5042740.3755	598601.1380	2	M	2
7	45.53064372	-91.73721700	5042676.4275	598603.5287	2	M	2
16	45.53180779	-91.73643320	5042806.7155	598662.6954	6	M	V
25	45.53297185	-91.73564937	5042937.0030	598721.8618	4	M	V
26	45.53239605	-91.73563165	5042873.0550	598724.2530	4	M	V
27	45.53124444	-91.73559622	5042745.1579	598729.0347	4	M	V
28	45.53066863	-91.73557850	5042681.2088	598731.4259	8	M	V
508	45.51296755	-91.72520167	5040727.4858	599572.9155	3	M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	LEMNA_TRIS
16	45.53180779	-91.73643320	5042806.7155	598662.6954	6	M	1
19	45.53008038	-91.73638003	5042614.8704	598669.8679	3	M	1
20	45.52950457	-91.73636231	5042550.9212	598672.2585	4	M	1
21	45.52892877	-91.73634458	5042486.9733	598674.6500	5	S/R	1
31	45.52836541	-91.73550765	5042425.4146	598740.9887	7	R/M	1
39	45.51686174	-91.73433445	5041148.8342	598852.7480	3	M	1
44	45.52896611	-91.73388691	5042494.1455	598866.4953	8	R/M	1
49	45.51572256	-91.73348003	5041023.3270	598921.4771	1	M	1
63	45.51688661	-91.73269635	5041153.6152	598980.6451	2	R	1
64	45.51631080	-91.73267867	5041089.6662	598983.0357	7	R	1
65	45.51573499	-91.73266099	5041025.7173	598985.4262	2	M	1
66	45.51515919	-91.73264332	5040961.7694	598987.8160	3	M	1
105	45.52670017	-91.73135855	5042245.5229	599067.9040	10	R	1
121	45.51748726	-91.73107590	5041222.3444	599106.1528	13	R	1
126	45.51460822	-91.73098761	5040902.6008	599118.1035	4	R	1
128	45.51345660	-91.73095229	5040774.7030	599122.8842	4	R	1
129	45.51288079	-91.73093463	5040710.7541	599125.2746	4	R	1
143	45.49790976	-91.73047574	5039048.0877	599187.4100	4	M	1
182	45.50828674	-91.72997447	5040201.5553	599208.3434	5	R	1
193	45.50195284	-91.72978042	5039498.1193	599234.6312	5	R	1
194	45.50137703	-91.72976278	5039434.1705	599237.0211	2	R	1
198	45.49907379	-91.72969223	5039178.3754	599246.5799	13	R	1
201	45.53017984	-91.72982609	5042633.9966	599181.4566	7	R	1
232	45.51232980	-91.72927901	5040651.5859	599255.5616	9	M/R	1
234	45.51117818	-91.72924373	5040523.6881	599260.3419	4	M	1
238	45.50887495	-91.72917318	5040267.8937	599269.9021	5	R	1
284	45.51579705	-91.72856582	5041037.6685	599305.1692	7	M/R	1
285	45.51522124	-91.72854818	5040973.7195	599307.5599	4	M/R	1
287	45.51406963	-91.72851292	5040845.8228	599312.3398	6	M/R	1
343	45.51753687	-91.72779966	5041231.9050	599361.9473	6	M/R	1
344	45.51696107	-91.72778203	5041167.9572	599364.3378	5	M/R	1
345	45.51638526	-91.72776440	5041104.0083	599366.7284	4	M/R	1
347	45.51523364	-91.72772915	5040976.1104	599371.5087	3	M/R	1
348	45.51465783	-91.72771153	5040912.1615	599373.8986	2	M/R	1
351	45.51293040	-91.72765866	5040720.3148	599381.0689	6	M/R	1
385	45.49335286	-91.72705977	5038546.0558	599462.3206	6	M/R	1
389	45.52848962	-91.72731546	5042449.3229	599380.4754	9	R	1
404	45.51697345	-91.72696298	5041170.3465	599428.2863	3	M	1
405	45.51639765	-91.72694536	5041106.3987	599430.6767	3	M	1
406	45.51582184	-91.72692774	5041042.4497	599433.0671	2	M	1
407	45.51524603	-91.72691012	5040978.5008	599435.4576	2	S	1

408	45.51467022	-91.72689251	5040914.5519	599437.8473	2	S/M	1
409	45.51409441	-91.72687489	5040850.6030	599440.2378	2	S/M	1
410	45.51351860	-91.72685727	5040786.6541	599442.6283	3	M	1
412	45.51236698	-91.72682204	5040658.7563	599447.4086	7	M	1
445	45.49336524	-91.72624106	5038548.4453	599526.2693	6	M/R	1
446	45.52907782	-91.72651386	5042515.6629	599442.0334	6	M/R	1
457	45.51641003	-91.72612631	5041108.7886	599494.6258	2	S	1
460	45.51410679	-91.72605588	5040852.9930	599504.1864	3	M	1
461	45.51353098	-91.72603827	5040789.0441	599506.5768	5	M	1
463	45.51237936	-91.72600306	5040661.1463	599511.3568	6	M	1
464	45.51180355	-91.72598545	5040597.1974	599513.7472	7	M/R	1
507	45.51354336	-91.72521926	5040791.4347	599570.5260	2	M	1
508	45.51296755	-91.72520167	5040727.4858	599572.9155	3	M	1
509	45.51239174	-91.72518407	5040663.5369	599575.3057	4	M	1
546	45.51355573	-91.72440026	5040793.8249	599634.4744	3	M	1
577	45.52278105	-91.72386263	5041819.3974	599660.1779	5	M/R	1
586	45.50550674	-91.72333516	5039900.9297	599731.8831	9	S/M	1
617	45.48709310	-91.72195441	5037856.9528	599872.2957	2	M	1
634	45.50266473	-91.72079074	5039588.3546	599935.6794	2	M	1
640	45.48769359	-91.72033470	5037925.6800	599997.8042	3	M	1
641	45.48711778	-91.72031717	5037861.7314	600000.1931	3	M	1
645	45.50210125	-91.71995435	5039526.7949	600002.0183	2	M	1
646	45.50152544	-91.71993682	5039462.8462	600004.4074	3	M	1
649	45.49979800	-91.71988420	5039270.9989	600011.5771	3	m	1
650	45.49519150	-91.71974393	5038759.4071	600030.6931	2	M	1
658	45.50384102	-91.71918810	5039721.0320	600058.7981	2	M	1
665	45.49002150	-91.71876750	5038186.2545	600116.1459	2	M	1
673	45.49003382	-91.71794883	5038188.6439	600180.0952	3	M	1
680	45.49522846	-91.71728771	5038766.5749	600222.5397	3	M	1
698	45.49524077	-91.71646896	5038768.9645	600286.4893	2	M	1
700	45.49408914	-91.71643397	5038641.0660	600291.2677	5	M	1
715	45.48430029	-91.71613659	5037553.9309	600331.8839	8	M	1
734	45.48316096	-91.71528304	5037428.4218	600400.6114	5	S	1
776	45.49185961	-91.71145181	5038399.6056	600684.5204	5	M	1
815	45.49361159	-91.70986670	5038596.2325	600805.2513	5	M	1
32	45.51627349	-91.73513579	5041082.4951	598791.1903	2	M	2
98	45.49789735	-91.73129452	5039045.6983	599123.4610	3	M	2
346	45.51580945	-91.72774678	5041040.0593	599369.1182	3	M/R	2

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ D	EPTH	SED	MEGALODONT
641	45.48711778	-91.72031717	5037861.7314	600000.1931	3	M	1
645	45.50210125	-91.71995435	5039526.7949	600002.0183	2	M	1
653	45.49000918	-91.71958617	5038183.8659	600052.1966	2	M	1
664	45.49174894	-91.71882006	5038378.1015	600108.9781	5	R/S	1
673	45.49003382	-91.71794883	5038188.6439	600180.0952	3	M	1
681	45.49465265	-91.71727020	5038702.6263	600224.9294	2	M	1
773	45.49358706	-91.71150415	5038591.4537	600677.3523	3	M	1
824	45.48842924	-91.70970985	5038020.6885	600826.7546	11	M	1

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SEDIMENT	MYOSOTIS_S
34	45.53298430	-91.73483008	5042939.3941	598785.8109	7	R/M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	MYRIOPHYLL
60	45.51976564	-91.73278474	5041473.3578	598968.6935	8	R	1
95	45.51344419	-91.73177129	5040772.3136	599058.9356	3	S/R	1
98	45.49789735	-91.73129452	5039045.6983	599123.4610	3	M	1
125	45.51518403	-91.73100526	5040966.5497	599115.7139	3	R	1
135	45.50769852	-91.73077575	5040135.2163	599146.7842	3	M	1
136	45.50712271	-91.73075809	5040071.2675	599149.1748	4	M	1
173	45.51346901	-91.73013329	5040777.0930	599186.8328	7	R	1
174	45.51289321	-91.73011564	5040713.1452	599189.2230	3	R	1
176	45.51174159	-91.73008034	5040585.2474	599194.0036	3	S	1
184	45.50713512	-91.72993918	5040073.6576	599213.1235	2	R	1
185	45.50655931	-91.72992154	5040009.7087	599215.5132	2	R	1
186	45.50598350	-91.72990390	5039945.7599	599217.9029	2	R	1
237	45.50945076	-91.72919082	5040331.8426	599267.5118	3	R	1
242	45.50657171	-91.72910264	5040012.0983	599279.4617	8	M/R	1
288	45.51349382	-91.72849528	5040781.8739	599314.7306	6	M/R	1
294	45.51003897	-91.72838950	5040398.1817	599329.0708	5	R	1
349	45.51408202	-91.72769390	5040848.2126	599376.2892	3	M/R	1
385	45.49335286	-91.72705977	5038546.0558	599462.3206	6	M/R	1
456	45.52044069	-91.72624959	5041556.4301	599477.8934	5	M/R	1
606	45.50724653	-91.72256897	5040095.1665	599788.6625	2	R	1
617	45.48709310	-91.72195441	5037856.9528	599872.2957	2	M	1
620	45.50322820	-91.72162715	5039649.9139	599869.3403	2	S/M	1
628	45.48768126	-91.72115333	5037923.2915	599933.8554	3	M	1
629	45.48710544	-91.72113579	5037859.3418	599936.2444	3	M	1
633	45.50324054	-91.72080829	5039652.3034	599933.2895	2	M	1
634	45.50266473	-91.72079074	5039588.3546	599935.6794	2	M	1
641	45.48711778	-91.72031717	5037861.7314	600000.1931	3	M	1
655	45.48770592	-91.71951607	5037928.0692	600061.7530	5	M	1
656	45.48713011	-91.71949854	5037864.1206	600064.1425	5	M	1
657	45.48655429	-91.71948102	5037800.1709	600066.5313	4	M	1
660	45.50268940	-91.71915304	5039593.1345	600063.5774	2	M	1
667	45.49406452	-91.71807142	5038636.2877	600163.3698	3	R	1
674	45.48888219	-91.71791382	5038060.7455	600184.8728	8	R	1
678	45.48485149	-91.71779126	5037613.1021	600201.5971	3	M/S	1
679	45.49580428	-91.71730521	5038830.5247	600220.1508	2	M	1
681	45.49465265	-91.71727020	5038702.6263	600224.9294	2	M	1
682	45.49407683	-91.71725269	5038638.6765	600227.3191	7	M	1
695	45.48543961	-91.71699017	5037679.4396	600263.1567	7	M	1
697	45.48428798	-91.71695517	5037551.5414	600267.9352	5	S	1
699	45.49466496	-91.71645146	5038705.0158	600288.8789	2	M	1
700	45.49408914	-91.71643397	5038641.0660	600291.2677	5	M	1

702	45.49293751	-91.71639897	5038513.1676	600296.0469	2	M	1
716	45.48372447	-91.71611910	5037489.9813	600334.2730	4	M	1
718	45.49294982	-91.71558026	5038515.5578	600359.9960	2	M	1
732	45.48431259	-91.71531800	5037556.3200	600395.8334	8	S	1
733	45.48373677	-91.71530052	5037492.3704	600398.2224	6	S	1
734	45.48316096	-91.71528304	5037428.4218	600400.6114	5	S	1
771	45.49819358	-91.71164374	5039103.0473	600658.2367	4	M	1
791	45.49590259	-91.71075518	5038849.6401	600731.7444	5	M	1
792	45.49532677	-91.71073774	5038785.6903	600734.1338	2	M	1
796	45.49244769	-91.71065055	5038465.9439	600746.0804	3	M	1
799	45.48956861	-91.71056337	5038146.1976	600758.0267	9	M	1
806	45.49936975	-91.71004103	5039235.7256	600781.3562	2	M	1
808	45.49764230	-91.70998872	5039043.8774	600788.5254	4	M	1
809	45.49706648	-91.70997129	5038979.9276	600790.9147	2	M	1
819	45.49130832	-91.70979698	5038340.4348	600814.8088	5	M/S	1
825	45.48785342	-91.70969243	5037956.7389	600829.1434	11	M	1
829	45.49823037	-91.70918737	5039110.2159	600850.0847	3	M	1
836	45.50054589	-91.70843825	5039368.4032	600904.4760	3	M	1
843	45.50113395	-91.70763684	5039434.7419	600966.0355	3	M	1
696	45.48486380	-91.71697267	5037615.4910	600265.5460	7	R	2
63	45.51688661	-91.73269635	5041153.6152	598980.6451	2	R	V
92	45.51517161	-91.73182429	5040964.1593	599051.7650	2	S	V
126	45.51460822	-91.73098761	5040902.6008	599118.1035	4	R	V
140	45.50021300	-91.73054632	5039303.8828	599177.8513	3	R	V
194	45.50137703	-91.72976278	5039434.1705	599237.0211	2	R	V
457	45.51641003	-91.72612631	5041108.7886	599494.6258	2	S	V
509	45.51239174	-91.72518407	5040663.5369	599575.3057	4	M	V
635	45.50151310	-91.72075565	5039460.4560	599940.4586	2	M	V
648	45.50037381	-91.71990174	5039334.9476	600009.1871	2	M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	NAJAS_FLEX
177	45.51116578	-91.73006270	5040521.2985	599196.3931	2	S	1
200	45.49792217	-91.72965696	5039050.4779	599251.3590	6	R	1
578	45.51011323	-91.72347577	5040412.5214	599712.7639	8	M/R	1
607	45.50436747	-91.72248113	5039775.4215	599800.6123	2	S/M	1
608	45.50379166	-91.72246357	5039711.4727	599803.0017	3	S/M	1
619	45.50898631	-91.72180273	5040289.4029	599845.4420	2	S/M	1
635	45.50151310	-91.72075565	5039460.4560	599940.4586	2	M	1
643	45.50325288	-91.71998943	5039654.6935	599997.2386	2	M	1
689	45.49004613	-91.71713017	5038191.0327	600244.0437	2	R	1
773	45.49358706	-91.71150415	5038591.4537	600677.3523	3	M	1
839	45.49881844	-91.70838600	5039176.5550	600911.6443	2	M	1
495	45.49395342	-91.72543993	5038614.7830	599587.8293	12	R	2
41	45.51571013	-91.73429906	5041020.9374	598857.5288	2	M	V
63	45.51688661	-91.73269635	5041153.6152	598980.6451	2	R	V
95	45.51344419	-91.73177129	5040772.3136	599058.9356	3	S/R	V
457	45.51641003	-91.72612631	5041108.7886	599494.6258	2	S	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	NAJAS_GRAC
29	45.52951702	-91.73554307	5042553.3117	598736.2077	5	R/S	1

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	NITELLA SP
29	45.52951702	-91.73554307	5042553.31	598736.21	5	R/S	1
31	45.52836541	-91.73550765	5042425.41	598740.99	7	R/M	1
38	45.52780206	-91.73467073	5042363.86	598807.33	7	R	1
46	45.52781450	-91.73385152	5042366.25	598871.28	6	R/M	1
95	45.51344419	-91.73177129	5040772.31	599058.94	3	S/R	1
186	45.50598350	-91.72990390	5039945.76	599217.90	2	R	1
651	45.49461568	-91.71972640	5038695.46	600033.08	2	M	1
677	45.48542730	-91.71780877	5037677.05	600199.21	2	S	1
773	45.49358706	-91.71150415	5038591.45	600677.35	3	M	1
778	45.48955634	-91.71138203	5038143.81	600694.08	6	M	1

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	NUPHAR_VAR
4	45.53237113	-91.73727020	5042868.2726	598596.3558	2	M	1
6	45.53121952	-91.73723473	5042740.3755	598601.1380	2	M	1
32	45.51627349	-91.73513579	5041082.4951	598791.1903	2	M	1
33	45.51569769	-91.73511809	5041018.5473	598793.5804	2	M	1
40	45.51628593	-91.73431675	5041084.8852	598855.1388	3	M	1
50	45.51514676	-91.73346234	5040959.3791	598923.8678	2	M	1
633	45.50324054	-91.72080829	5039652.3034	599933.2895	2	M	1
634	45.50266473	-91.72079074	5039588.3546	599935.6794	2	M	1
648	45.50037381	-91.71990174	5039334.9476	600009.1871	2	M	1
649	45.49979800	-91.71988420	5039270.9989	600011.5771	3	m	1
680	45.49522846	-91.71728771	5038766.5749	600222.5397	3	M	1
698	45.49524077	-91.71646896	5038768.9645	600286.4893	2	M	1
796	45.49244769	-91.71065055	5038465.9439	600746.0804	3	M	1
829	45.49823037	-91.70918737	5039110.2159	600850.0847	3	M	1
836	45.50054589	-91.70843825	5039368.4032	600904.4760	3	M	1
1	45.53235867	-91.73808947	5042865.8824	598532.4076	2	M	V
3	45.53294694	-91.73728793	5042932.2218	598593.9652	3	M	V
13	45.51567279	-91.73675616	5041013.7668	598665.6828	2	S	V
63	45.51688661	-91.73269635	5041153.6152	598980.6451	2	R	V
772	45.49761777	-91.71162629	5039039.0986	600660.6262	12	M	V
789	45.49763004	-91.71080751	5039041.4882	600724.5754	4	M	V
806	45.49936975	-91.71004103	5039235.7256	600781.3562	2	M	V
808	45.49764230	-91.70998872	5039043.8774	600788.5254	4	M	V
843	45.50113395	-91.70763684	5039434.7419	600966.0355	3	M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	NYMPHAEA_O
6	45.53121952	-91.73723473	5042740.3755	598601.1380	2	M	1
24	45.51568524	-91.73593713	5041016.1567	598729.6312	3	M	1
33	45.51569769	-91.73511809	5041018.5473	598793.5804	2	M	1
41	45.51571013	-91.73429906	5041020.9374	598857.5288	2	M	1
42	45.51513432	-91.73428137	5040956.9884	598859.9188	2	M	1
48	45.51629837	-91.73349771	5041087.2759	598919.0872	3	M	1
50	45.51514676	-91.73346234	5040959.3791	598923.8678	2	M	1
633	45.50324054	-91.72080829	5039652.3034	599933.2895	2	M	1
634	45.50266473	-91.72079074	5039588.3546	599935.6794	2	M	1
643	45.50325288	-91.71998943	5039654.6935	599997.2386	2	M	1
648	45.50037381	-91.71990174	5039334.9476	600009.1871	2	M	1
649	45.49979800	-91.71988420	5039270.9989	600011.5771	3	m	1
650	45.49519150	-91.71974393	5038759.4071	600030.6931	2	M	1
651	45.49461568	-91.71972640	5038695.4573	600033.0824	2	M	1
660	45.50268940	-91.71915304	5039593.1345	600063.5774	2	M	1
665	45.49002150	-91.71876750	5038186.2545	600116.1459	2	M	1
677	45.48542730	-91.71780877	5037677.0507	600199.2077	2	S	1
678	45.48485149	-91.71779126	5037613.1021	600201.5971	3	M/S	1
698	45.49524077	-91.71646896	5038768.9645	600286.4893	2	M	1
829	45.49823037	-91.70918737	5039110.2159	600850.0847	3	M	1
3	45.53294694	-91.73728793	5042932.2218	598593.9652	3	M	V
5	45.53179533	-91.73725247	5042804.3246	598598.7465	2	M	V
7	45.53064372	-91.73721700	5042676.4275	598603.5287	2	M	V
15	45.53238359	-91.73645092	5042870.6635	598660.3048	4	M	V
32	45.51627349	-91.73513579	5041082.4951	598791.1903	2	M	V
47	45.51687418	-91.73351540	5041151.2249	598916.6966	4	M	V
63	45.51688661	-91.73269635	5041153.6152	598980.6451	2	R	V
72	45.52726355	-91.73219542	5042307.0804	599001.5648	8	R	V
140	45.50021300	-91.73054632	5039303.8828	599177.8513	3	R	V
143	45.49790976	-91.73047574	5039048.0877	599187.4100	4	M	V
457	45.51641003	-91.72612631	5041108.7886	599494.6258	2	S	V
505	45.51469498	-91.72525446	5040919.3325	599565.7455	2	M	V
619	45.50898631	-91.72180273	5040289.4029	599845.4420	2	S/M	V
657	45.48655429	-91.71948102	5037800.1709	600066.5313	4	M	V
664	45.49174894	-91.71882006	5038378.1015	600108.9781	5	R/S	V
695	45.48543961	-91.71699017	5037679.4396	600263.1567	7	M	V
697	45.48428798	-91.71695517	5037551.5414	600267.9352	5	S	V
718	45.49294982	-91.71558026	5038515.5578	600359.9960	2	M	V
771	45.49819358	-91.71164374	5039103.0473	600658.2367	4	M	V
772	45.49761777	-91.71162629	5039039.0986	600660.6262	12	M	V
789	45.49763004	-91.71080751	5039041.4882	600724.5754	4	M	V

806	45.49936975	-91.71004103	5039235.7256	600781.3562	2	M	V
843	45.50113395	-91.70763684	5039434.7419	600966.0355	3	M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	PONTEDERIA
1	45.53235867	-91.73808947	5042865.8824	598532.4076	2	M V	
2	45.53178286	-91.73807173	5042801.9333	598534.7984	2	M V	
839	45.49881844	-91.70838600	5039176.5550	600911.6443	2	M V	
843	45.50113395	-91.70763684	5039434.7419	600966.0355	3	M V	

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	P. amplifolius
630	45.48652963	-91.72111825	5037795.3932	599938.6334	3	M	1
632	45.48537800	-91.72108317	5037667.4949	599943.4115	4	M	1
645	45.50210125	-91.71995435	5039526.7949	600002.0183	2	M	1
646	45.50152544	-91.71993682	5039462.8462	600004.4074	3	M	1
647	45.50094963	-91.71991928	5039398.8974	600006.7972	3	M	1
648	45.50037381	-91.71990174	5039334.9476	600009.1871	2	M	1
649	45.49979800	-91.71988420	5039270.9989	600011.5771	3	M	1
652	45.49173662	-91.71963875	5038375.7129	600045.0292	3	M	1
657	45.48655429	-91.71948102	5037800.1709	600066.5313	4	M	1
775	45.49243542	-91.71146925	5038463.5542	600682.1316	4	M	1
809	45.49706648	-91.70997129	5038979.9276	600790.9147	2	M	1
810	45.49649067	-91.70995386	5038915.9790	600793.3039	2	M	1
811	45.49591485	-91.70993643	5038852.0292	600795.6932	4	M	1
813	45.49476322	-91.70990156	5038724.1309	600800.4726	4	M	1
815	45.49361159	-91.70986670	5038596.2325	600805.2513	5	M	1
28	45.53066863	-91.73557850	5042681.2088	598731.4259	8	M	V
679	45.49580428	-91.71730521	5038830.5247	600220.1508	2	M	V
831	45.49707874	-91.70915252	5038982.3174	600854.8637	3	M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	P.epihydrous
13	45.51567279	-91.73675616	5041013.7668	598665.6828	2	S	1
640	45.48769359	-91.72033470	5037925.6800	599997.8042	3	M	V
806	45.49936975	-91.71004103	5039235.7256	600781.3562	2	M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	P.foliosus
136	45.50712271	-91.73075809	5040071.2675	599149.1748	4	M	1
138	45.50597109	-91.73072279	5039943.3698	599153.9544	5	M	1
181	45.50886255	-91.72999211	5040265.5041	599205.9538	4	R	1
404	45.51697345	-91.72696298	5041170.3465	599428.2863	3	M	1
496	45.52563535	-91.72558896	5042134.3604	599520.3266	4	R	1
509	45.51239174	-91.72518407	5040663.5369	599575.3057	4	M	1
607	45.50436747	-91.72248113	5039775.4215	599800.6123	2	S/M	1
664	45.49174894	-91.71882006	5038378.1015	600108.9781	5	R/S	1
717	45.49352563	-91.71559775	5038579.5064	600357.6065	2	S/M	1
732	45.48431259	-91.71531800	5037556.3200	600395.8334	8	S	1
823	45.48900505	-91.70972728	5038084.6371	600824.3651	9	M	1

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	P. friesii
134	45.50885014	-91.73081105	5040263.1141	599142.0047	3	R	1
173	45.51346901	-91.73013329	5040777.0930	599186.8328	7	R	1
347	45.51523364	-91.72772915	5040976.1104	599371.5087	3	M/R	1
348	45.51465783	-91.72771153	5040912.1615	599373.8986	2	M/R	1
406	45.51582184	-91.72692774	5041042.4497	599433.0671	2	M	1
408	45.51467022	-91.72689251	5040914.5519	599437.8473	2	S/M	1
412	45.51236698	-91.72682204	5040658.7563	599447.4086	7	M	1
456	45.52044069	-91.72624959	5041556.4301	599477.8934	5	M/R	1
504	45.52102888	-91.72544809	5041622.7696	599539.4517	5	R	1
620	45.50322820	-91.72162715	5039649.9139	599869.3403	2	S/M	1
643	45.50325288	-91.71998943	5039654.6935	599997.2386	2	M	1
649	45.49979800	-91.71988420	5039270.9989	600011.5771	3	M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	P. natans
642	45.48654196	-91.72029963	5037797.7817	600002.5828	2	M	1

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	P. praelongus
39	45.51686174	-91.73433445	5041148.8342	598852.7480	3	M	1
458	45.51525841	-91.72609109	5040980.8908	599499.4064	2	S/M	1
631	45.48595381	-91.72110071	5037731.4435	599941.0225	5	M	1
776	45.49185961	-91.71145181	5038399.6056	600684.5204	5	M	1
28	45.53066863	-91.73557850	5042681.2088	598731.4259	8	M	V
405	45.51639765	-91.72694536	5041106.3987	599430.6767	3	M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	P. pusillus
6	45.53121952	-91.73723473	5042740.3755	598601.1380	2	M	1
7	45.53064372	-91.73721700	5042676.4275	598603.5287	2	M	1
17	45.53123198	-91.73641548	5042742.7664	598665.0860	6	M	1
21	45.52892877	-91.73634458	5042486.9733	598674.6500	5	S/R	1
68	45.52956678	-91.73226614	5042562.8756	598992.0016	10	R	1
69	45.52899097	-91.73224846	5042498.9265	598994.3923	9	R	1
92	45.51517161	-91.73182429	5040964.1593	599051.7650	2	S	1
95	45.51344419	-91.73177129	5040772.3136	599058.9356	3	S/R	1
125	45.51518403	-91.73100526	5040966.5497	599115.7139	3	R	1
133	45.50942595	-91.73082870	5040327.0629	599139.6150	2	S	1
136	45.50712271	-91.73075809	5040071.2675	599149.1748	4	M	1
138	45.50597109	-91.73072279	5039943.3698	599153.9544	5	M	1
139	45.50539528	-91.73070514	5039879.4210	599156.3443	4	M	1
176	45.51174159	-91.73008034	5040585.2474	599194.0036	3	S	1
179	45.51001416	-91.73002740	5040393.4008	599201.1738	5	R	1
184	45.50713512	-91.72993918	5040073.6576	599213.1235	2	R	1
186	45.50598350	-91.72990390	5039945.7599	599217.9029	2	R	1
194	45.50137703	-91.72976278	5039434.1705	599237.0211	2	R	1
199	45.49849798	-91.72967460	5039114.4266	599248.9690	11	R	1
279	45.51867610	-91.72865399	5041357.4132	599293.2182	9	M/R	1
298	45.50773573	-91.72831899	5040142.3863	599338.6306	10	M/R	1
299	45.50715992	-91.72830136	5040078.4375	599341.0208	11	M/R	1
342	45.51811268	-91.72781729	5041295.8539	599359.5568	5	R	1
385	45.49335286	-91.72705977	5038546.0558	599462.3206	6	M/R	1
388	45.52906543	-91.72733309	5042513.2719	599378.0846	8	R	1
406	45.51582184	-91.72692774	5041042.4497	599433.0671	2	M	1
408	45.51467022	-91.72689251	5040914.5519	599437.8473	2	S/M	1
456	45.52044069	-91.72624959	5041556.4301	599477.8934	5	M/R	1
457	45.51641003	-91.72612631	5041108.7886	599494.6258	2	S	1
458	45.51525841	-91.72609109	5040980.8908	599499.4064	2	S/M	1
546	45.51355573	-91.72440026	5040793.8249	599634.4744	3	M	1
586	45.50550674	-91.72333516	5039900.9297	599731.8831	9	S/M	1
590	45.50320350	-91.72326486	5039645.1346	599741.4427	9	M/R	1
606	45.50724653	-91.72256897	5040095.1665	599788.6625	2	R	1
608	45.50379166	-91.72246357	5039711.4727	599803.0017	3	S/M	1
639	45.49345173	-91.72051006	5038565.1708	599973.9118	9	M/R	1
649	45.49979800	-91.71988420	5039270.9989	600011.5771	3	m	1
650	45.49519150	-91.71974393	5038759.4071	600030.6931	2	M	1
659	45.50326521	-91.71917057	5039657.0833	600061.1877	3	M	1
676	45.48773056	-91.71787880	5037932.8472	600189.6513	11	M/R	1
678	45.48485149	-91.71779126	5037613.1021	600201.5971	3	M/S	1

689	45.49004613	-91.71713017	5038191.0327	600244.0437	2	R	1
699	45.49466496	-91.71645146	5038705.0158	600288.8789	2	M	1
745	45.48490070	-91.71451689	5037622.6583	600457.3932	13	M	1
777	45.49013216	-91.71139947	5038207.7576	600691.6888	5	M	1
799	45.48956861	-91.71056337	5038146.1976	600758.0267	9	M	1
843	45.50113395	-91.70763684	5039434.7419	600966.0355	3	M	1
185	45.50655931	-91.72992154	5040009.7087	599215.5132	2	R	2
237	45.50945076	-91.72919082	5040331.8426	599267.5118	3	R	2
318	45.49621953	-91.72796656	5038863.4106	599386.4245	2	M/R	2
459	45.51468260	-91.72607349	5040916.9419	599501.7960	2	S/M	2
616	45.49400286	-91.72216504	5038624.3410	599843.6249	5	R	2
681	45.49465265	-91.71727020	5038702.6263	600224.9294	2	M	2
695	45.48543961	-91.71699017	5037679.4396	600263.1567	7	M	2
41	45.51571013	-91.73429906	5041020.9374	598857.5288	2	M	V
460	45.51410679	-91.72605588	5040852.9930	599504.1864	3	M	V
839	45.49881844	-91.70838600	5039176.5550	600911.6443	2	M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	P. richardsonii
92	45.51517161	-91.73182429	5040964.1593	599051.7650	2	S	1
177	45.51116578	-91.73006270	5040521.2985	599196.3931	2	S	1
193	45.50195284	-91.72978042	5039498.1193	599234.6312	5	R	1
194	45.50137703	-91.72976278	5039434.1705	599237.0211	2	R	1
294	45.51003897	-91.72838950	5040398.1817	599329.0708	5	R	1
349	45.51408202	-91.72769390	5040848.2126	599376.2892	3	M/R	1
405	45.51639765	-91.72694536	5041106.3987	599430.6767	3	M	1
460	45.51410679	-91.72605588	5040852.9930	599504.1864	3	M	1
508	45.51296755	-91.72520167	5040727.4858	599572.9155	3	M	1
578	45.51011323	-91.72347577	5040412.5214	599712.7639	8	M/R	1
608	45.50379166	-91.72246357	5039711.4727	599803.0017	3	S/M	1
617	45.48709310	-91.72195441	5037856.9528	599872.2957	2	M	1
620	45.50322820	-91.72162715	5039649.9139	599869.3403	2	S/M	1
627	45.48825707	-91.72117087	5037987.2401	599931.4664	2	M	1
630	45.48652963	-91.72111825	5037795.3932	599938.6334	3	M	1
640	45.48769359	-91.72033470	5037925.6800	599997.8042	3	M	1
642	45.48654196	-91.72029963	5037797.7817	600002.5828	2	M	1
648	45.50037381	-91.71990174	5039334.9476	600009.1871	2	M	1
649	45.49979800	-91.71988420	5039270.9989	600011.5771	3	m	1
652	45.49173662	-91.71963875	5038375.7129	600045.0292	3	M	1
654	45.48828173	-91.71953359	5037992.0178	600059.3643	4	S	1
657	45.48655429	-91.71948102	5037800.1709	600066.5313	4	M	1
677	45.48542730	-91.71780877	5037677.0507	600199.2077	2	S	1
689	45.49004613	-91.71713017	5038191.0327	600244.0437	2	R	1
699	45.49466496	-91.71645146	5038705.0158	600288.8789	2	M	1
717	45.49352563	-91.71559775	5038579.5064	600357.6065	2	S/M	1
762	45.48896826	-91.71218324	5038077.4703	600632.5178	13	M/R	1
777	45.49013216	-91.71139947	5038207.7576	600691.6888	5	M	1
778	45.48955634	-91.71138203	5038143.8079	600694.0777	6	M	1
794	45.49417514	-91.71070286	5038657.7920	600738.9127	4	M	1
812	45.49533903	-91.70991899	5038788.0795	600798.0833	4	M	1
814	45.49418740	-91.70988413	5038660.1811	600802.8619	5	M	1
13	45.51567279	-91.73675616	5041013.7668	598665.6828	2	S	V
14	45.53295940	-91.73646865	5042934.6126	598657.9135	4	M	V
21	45.52892877	-91.73634458	5042486.9733	598674.6500	5	S/R	V
33	45.51569769	-91.73511809	5041018.5473	598793.5804	2	M	V
39	45.51686174	-91.73433445	5041148.8342	598852.7480	3	M	V
63	45.51688661	-91.73269635	5041153.6152	598980.6451	2	R	V
347	45.51523364	-91.72772915	5040976.1104	599371.5087	3	M/R	V
457	45.51641003	-91.72612631	5041108.7886	599494.6258	2	S	V
458	45.51525841	-91.72609109	5040980.8908	599499.4064	2	S/M	V

504	45.52102888	-91.72544809	5041622.7696	599539.4517	5	R	V
651	45.49461568	-91.71972640	5038695.4573	600033.0824	2	M	V
793	45.49475096	-91.71072030	5038721.7417	600736.5232	3	M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	P. robbinsii
25	45.53297185	-91.73564937	5042937.0030	598721.8618	4	M	1
39	45.51686174	-91.73433445	5041148.8342	598852.7480	3	M	1
66	45.51515919	-91.73264332	5040961.7694	598987.8160	3	M	1
98	45.49789735	-91.73129452	5039045.6983	599123.4610	3	M	1
135	45.50769852	-91.73077575	5040135.2163	599146.7842	3	M	1
617	45.48709310	-91.72195441	5037856.9528	599872.2957	2	M	1
618	45.48651729	-91.72193687	5037793.0042	599874.6841	3	M	1
627	45.48825707	-91.72117087	5037987.2401	599931.4664	2	M	1
628	45.48768126	-91.72115333	5037923.2915	599933.8554	3	M	1
629	45.48710544	-91.72113579	5037859.3418	599936.2444	3	M	1
634	45.50266473	-91.72079074	5039588.3546	599935.6794	2	M	1
635	45.50151310	-91.72075565	5039460.4560	599940.4586	2	M	1
643	45.50325288	-91.71998943	5039654.6935	599997.2386	2	M	1
644	45.50267707	-91.71997189	5039590.7448	599999.6284	4	M	1
646	45.50152544	-91.71993682	5039462.8462	600004.4074	3	M	1
647	45.50094963	-91.71991928	5039398.8974	600006.7972	3	M	1
648	45.50037381	-91.71990174	5039334.9476	600009.1871	2	M	1
651	45.49461568	-91.71972640	5038695.4573	600033.0824	2	M	1
653	45.49000918	-91.71958617	5038183.8659	600052.1966	2	M	1
657	45.48655429	-91.71948102	5037800.1709	600066.5313	4	M	1
659	45.50326521	-91.71917057	5039657.0833	600061.1877	3	M	1
667	45.49406452	-91.71807142	5038636.2877	600163.3698	3	R	1
673	45.49003382	-91.71794883	5038188.6439	600180.0952	3	M	1
681	45.49465265	-91.71727020	5038702.6263	600224.9294	2	M	1
682	45.49407683	-91.71725269	5038638.6765	600227.3191	7	M	1
697	45.48428798	-91.71695517	5037551.5414	600267.9352	5	S	1
698	45.49524077	-91.71646896	5038768.9645	600286.4893	2	M	1
699	45.49466496	-91.71645146	5038705.0158	600288.8789	2	M	1
716	45.48372447	-91.71611910	5037489.9813	600334.2730	4	M	1
718	45.49294982	-91.71558026	5038515.5578	600359.9960	2	M	1
733	45.48373677	-91.71530052	5037492.3704	600398.2224	6	S	1
773	45.49358706	-91.71150415	5038591.4537	600677.3523	3	M	1
789	45.49763004	-91.71080751	5039041.4882	600724.5754	4	M	1
793	45.49475096	-91.71072030	5038721.7417	600736.5232	3	M	1
794	45.49417514	-91.71070286	5038657.7920	600738.9127	4	M	1
796	45.49244769	-91.71065055	5038465.9439	600746.0804	3	M	1
797	45.49187188	-91.71063311	5038401.9953	600748.4699	5	M	1
803	45.48726534	-91.71049363	5037890.4000	600767.5837	15	M/S	1
809	45.49706648	-91.70997129	5038979.9276	600790.9147	2	M	1
813	45.49476322	-91.70990156	5038724.1309	600800.4726	4	M	1
817	45.49245995	-91.70983184	5038468.3331	600810.0300	5	M	1

822	45.48958087	-91.70974470	5038148.5868	600821.9764	7	M	1
839	45.49881844	-91.70838600	5039176.5550	600911.6443	2	M	1
631	45.48595381	-91.72110071	5037731.4435	599941.0225	5	M	2
632	45.48537800	-91.72108317	5037667.4949	599943.4115	4	M	2
640	45.48769359	-91.72033470	5037925.6800	599997.8042	3	M	2
645	45.50210125	-91.71995435	5039526.7949	600002.0183	2	M	2
652	45.49173662	-91.71963875	5038375.7129	600045.0292	3	M	2
655	45.48770592	-91.71951607	5037928.0692	600061.7530	5	M	2
656	45.48713011	-91.71949854	5037864.1206	600064.1425	5	M	2
772	45.49761777	-91.71162629	5039039.0986	600660.6262	12	M	2
774	45.49301124	-91.71148670	5038527.5040	600679.7419	4	M	2
775	45.49243542	-91.71146925	5038463.5542	600682.1316	4	M	2
790	45.49647840	-91.71077262	5038913.5887	600729.3550	4	M	2
806	45.49936975	-91.71004103	5039235.7256	600781.3562	2	M	2
808	45.49764230	-91.70998872	5039043.8774	600788.5254	4	M	2
810	45.49649067	-91.70995386	5038915.9790	600793.3039	2	M	2
811	45.49591485	-91.70993643	5038852.0292	600795.6932	4	M	2
812	45.49533903	-91.70991899	5038788.0795	600798.0833	4	M	2
816	45.49303577	-91.70984927	5038532.2828	600807.6406	4	M	2
818	45.49188414	-91.70981441	5038404.3845	600812.4194	4	M	2
821	45.49015669	-91.70976213	5038212.5365	600819.5870	7	M	2
831	45.49707874	-91.70915252	5038982.3174	600854.8637	3	M	2
832	45.49650292	-91.70913509	5038918.3677	600857.2536	4	M	2
630	45.48652963	-91.72111825	5037795.3932	599938.6334	3	M	3
771	45.49819358	-91.71164374	5039103.0473	600658.2367	4	M	3
776	45.49185961	-91.71145181	5038399.6056	600684.5204	5	M	3
798	45.49129606	-91.71061567	5038338.0456	600750.8595	5	M	3
633	45.50324054	-91.72080829	5039652.3034	599933.2895	2	M	V
792	45.49532677	-91.71073774	5038785.6903	600734.1338	2	M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	P. zosteriformis
3	45.53294694	-91.73728793	5042932.2218	598593.9652	3	M	1
17	45.53123198	-91.73641548	5042742.7664	598665.0860	6	M	1
18	45.53065618	-91.73639775	5042678.8184	598667.4773	4	M	1
19	45.53008038	-91.73638003	5042614.8704	598669.8679	3	M	1
24	45.51568524	-91.73593713	5041016.1567	598729.6312	3	M	1
25	45.53297185	-91.73564937	5042937.0030	598721.8618	4	M	1
28	45.53066863	-91.73557850	5042681.2088	598731.4259	8	M	1
30	45.52894122	-91.73552536	5042489.3637	598738.5982	7	R/S	1
32	45.51627349	-91.73513579	5041082.4951	598791.1903	2	M	1
33	45.51569769	-91.73511809	5041018.5473	598793.5804	2	M	1
34	45.53298430	-91.73483008	5042939.3941	598785.8109	7	R/M	1
37	45.52837786	-91.73468843	5042427.8057	598804.9375	7	R/M	1
38	45.52780206	-91.73467073	5042363.8578	598807.3280	7	R	1
43	45.52954191	-91.73390461	5042558.0934	598864.1043	8	M	1
44	45.52896611	-91.73388691	5042494.1455	598866.4953	8	R/M	1
47	45.51687418	-91.73351540	5041151.2249	598916.6966	4	M	1
48	45.51629837	-91.73349771	5041087.2759	598919.0872	3	M	1
49	45.51572256	-91.73348003	5041023.3270	598921.4771	1	M	1
65	45.51573499	-91.73266099	5041025.7173	598985.4262	2	M	1
72	45.52726355	-91.73219542	5042307.0804	599001.5648	8	R	1
95	45.51344419	-91.73177129	5040772.3136	599058.9356	3	S/R	1
100	45.52957920	-91.73144690	5042565.2659	599055.9506	10	R	1
128	45.51345660	-91.73095229	5040774.7030	599122.8842	4	R	1
129	45.51288079	-91.73093463	5040710.7541	599125.2746	4	R	1
134	45.50885014	-91.73081105	5040263.1141	599142.0047	3	R	1
137	45.50654690	-91.73074044	5040007.3186	599151.5646	4	M	1
138	45.50597109	-91.73072279	5039943.3698	599153.9544	5	M	1
172	45.51404482	-91.73015094	5040841.0419	599184.4425	9	S	1
173	45.51346901	-91.73013329	5040777.0930	599186.8328	7	R	1
174	45.51289321	-91.73011564	5040713.1452	599189.2230	3	R	1
175	45.51231740	-91.73009799	5040649.1963	599191.6133	5	S	1
179	45.51001416	-91.73002740	5040393.4008	599201.1738	5	R	1
181	45.50886255	-91.72999211	5040265.5041	599205.9538	4	R	1
183	45.50771093	-91.72995683	5040137.6064	599210.7330	4	R	1
187	45.50540769	-91.72988626	5039881.8110	599220.2926	5	R	1
200	45.49792217	-91.72965696	5039050.4779	599251.3590	6	R	1
226	45.51578465	-91.72938485	5041035.2782	599241.2209	9	M/R	1
230	45.51348142	-91.72931429	5040779.4837	599250.7813	6	M/R	1
231	45.51290561	-91.72929665	5040715.5348	599253.1714	8	M/R	1
232	45.51232980	-91.72927901	5040651.5859	599255.5616	9	M/R	1
233	45.51175399	-91.72926137	5040587.6370	599257.9517	9	M/R	1

234	45.51117818	-91.72924373	5040523.6881	599260.3419	4	M	1
235	45.51060238	-91.72922609	5040459.7403	599262.7321	8	M/R	1
236	45.51002657	-91.72920845	5040395.7915	599265.1223	5	M/R	1
238	45.50887495	-91.72917318	5040267.8937	599269.9021	5	R	1
259	45.53019225	-91.72900684	5042636.3879	599245.4057	7	R	1
283	45.51637286	-91.72858345	5041101.6174	599302.7793	8	R	1
284	45.51579705	-91.72856582	5041037.6685	599305.1692	7	M/R	1
285	45.51522124	-91.72854818	5040973.7195	599307.5599	4	M/R	1
286	45.51464544	-91.72853055	5040909.7717	599309.9498	5	M/R	1
287	45.51406963	-91.72851292	5040845.8228	599312.3398	6	M/R	1
290	45.51234220	-91.72846002	5040653.9761	599319.5106	7	M/R	1
291	45.51176639	-91.72844239	5040590.0272	599321.9006	8	M/R	1
293	45.51061477	-91.72840713	5040462.1295	599326.6808	9	M/R	1
318	45.49621953	-91.72796656	5038863.4106	599386.4245	2	M/R	1
341	45.51868849	-91.72783492	5041359.8029	599357.1663	6	M/R	1
342	45.51811268	-91.72781729	5041295.8539	599359.5568	5	R	1
346	45.51580945	-91.72774678	5041040.0593	599369.1182	3	M/R	1
347	45.51523364	-91.72772915	5040976.1104	599371.5087	3	M/R	1
350	45.51350621	-91.72767628	5040784.2637	599378.6791	5	M	1
351	45.51293040	-91.72765866	5040720.3148	599381.0689	6	M/R	1
352	45.51235459	-91.72764103	5040656.3659	599383.4596	7	M/R	1
385	45.49335286	-91.72705977	5038546.0558	599462.3206	6	M/R	1
404	45.51697345	-91.72696298	5041170.3465	599428.2863	3	M	1
405	45.51639765	-91.72694536	5041106.3987	599430.6767	3	M	1
406	45.51582184	-91.72692774	5041042.4497	599433.0671	2	M	1
408	45.51467022	-91.72689251	5040914.5519	599437.8473	2	S/M	1
446	45.52907782	-91.72651386	5042515.6629	599442.0334	6	M/R	1
456	45.52044069	-91.72624959	5041556.4301	599477.8934	5	M/R	1
457	45.51641003	-91.72612631	5041108.7886	599494.6258	2	S	1
462	45.51295517	-91.72602066	5040725.0952	599508.9672	6	M	1
463	45.51237936	-91.72600306	5040661.1463	599511.3568	6	M	1
504	45.52102888	-91.72544809	5041622.7696	599539.4517	5	R	1
506	45.51411917	-91.72523686	5040855.3836	599568.1357	2	M	1
541	45.52449611	-91.72473457	5042008.8536	599589.0572	5	R	1
543	45.52334449	-91.72469937	5041880.9556	599593.8384	7	M/R	1
577	45.52278105	-91.72386263	5041819.3974	599660.1779	5	M/R	1
586	45.50550674	-91.72333516	5039900.9297	599731.8831	9	S/M	1
609	45.50321585	-91.72244600	5039647.5239	599805.3919	4	R	1
620	45.50322820	-91.72162715	5039649.9139	599869.3403	2	S/M	1
629	45.48710544	-91.72113579	5037859.3418	599936.2444	3	M	1
630	45.48652963	-91.72111825	5037795.3932	599938.6334	3	M	1
633	45.50324054	-91.72080829	5039652.3034	599933.2895	2	M	1
634	45.50266473	-91.72079074	5039588.3546	599935.6794	2	M	1

639	45.49345173	-91.72051006	5038565.1708	599973.9118	9	M/R	1
641	45.48711778	-91.72031717	5037861.7314	600000.1931	3	M	1
643	45.50325288	-91.71998943	5039654.6935	599997.2386	2	M	1
644	45.50267707	-91.71997189	5039590.7448	599999.6284	4	M	1
645	45.50210125	-91.71995435	5039526.7949	600002.0183	2	M	1
647	45.50094963	-91.71991928	5039398.8974	600006.7972	3	M	1
649	45.49979800	-91.71988420	5039270.9989	600011.5771	3	m	1
650	45.49519150	-91.71974393	5038759.4071	600030.6931	2	M	1
651	45.49461568	-91.71972640	5038695.4573	600033.0824	2	M	1
652	45.49173662	-91.71963875	5038375.7129	600045.0292	3	M	1
655	45.48770592	-91.71951607	5037928.0692	600061.7530	5	M	1
658	45.50384102	-91.71918810	5039721.0320	600058.7981	2	M	1
664	45.49174894	-91.71882006	5038378.1015	600108.9781	5	R/S	1
673	45.49003382	-91.71794883	5038188.6439	600180.0952	3	M	1
678	45.48485149	-91.71779126	5037613.1021	600201.5971	3	M/S	1
679	45.49580428	-91.71730521	5038830.5247	600220.1508	2	M	1
680	45.49522846	-91.71728771	5038766.5749	600222.5397	3	M	1
681	45.49465265	-91.71727020	5038702.6263	600224.9294	2	M	1
689	45.49004613	-91.71713017	5038191.0327	600244.0437	2	R	1
695	45.48543961	-91.71699017	5037679.4396	600263.1567	7	M	1
696	45.48486380	-91.71697267	5037615.4910	600265.5460	7	R	1
697	45.48428798	-91.71695517	5037551.5414	600267.9352	5	S	1
700	45.49408914	-91.71643397	5038641.0660	600291.2677	5	M	1
715	45.48430029	-91.71613659	5037553.9309	600331.8839	8	M	1
716	45.48372447	-91.71611910	5037489.9813	600334.2730	4	M	1
717	45.49352563	-91.71559775	5038579.5064	600357.6065	2	S/M	1
718	45.49294982	-91.71558026	5038515.5578	600359.9960	2	M	1
732	45.48431259	-91.71531800	5037556.3200	600395.8334	8	S	1
733	45.48373677	-91.71530052	5037492.3704	600398.2224	6	S	1
735	45.49181048	-91.71472659	5038390.0480	600428.7238	5	R	1
777	45.49013216	-91.71139947	5038207.7576	600691.6888	5	M	1
778	45.48955634	-91.71138203	5038143.8079	600694.0777	6	M	1
786	45.48494981	-91.71124250	5037632.2139	600713.1907	10	M	1
797	45.49187188	-91.71063311	5038401.9953	600748.4699	5	M	1
799	45.48956861	-91.71056337	5038146.1976	600758.0267	9	M	1
806	45.49936975	-91.71004103	5039235.7256	600781.3562	2	M	1
817	45.49245995	-91.70983184	5038468.3331	600810.0300	5	M	1
822	45.48958087	-91.70974470	5038148.5868	600821.9764	7	M	1
823	45.48900505	-91.70972728	5038084.6371	600824.3651	9	M	1
824	45.48842924	-91.70970985	5038020.6885	600826.7546	11	M	1
839	45.49881844	-91.70838600	5039176.5550	600911.6443	2	M	1
843	45.50113395	-91.70763684	5039434.7419	600966.0355	3	M	1
345	45.51638526	-91.72776440	5041104.0083	599366.7284	4	M/R	2

628	45.48768126	-91.72115333	5037923.2915	599933.8554	3	M	2
640	45.48769359	-91.72033470	5037925.6800	599997.8042	3	M	2
646	45.50152544	-91.71993682	5039462.8462	600004.4074	3	M	2
657	45.48655429	-91.71948102	5037800.1709	600066.5313	4	M	2
699	45.49466496	-91.71645146	5038705.0158	600288.8789	2	M	2
734	45.48316096	-91.71528304	5037428.4218	600400.6114	5	S	2
820	45.49073250	-91.70977956	5038276.4851	600817.1975	7	M	2
821	45.49015669	-91.70976213	5038212.5365	600819.5870	7	M	2
14	45.53295940	-91.73646865	5042934.6126	598657.9135	4	M	V
27	45.53124444	-91.73559622	5042745.1579	598729.0347	4	M	V
63	45.51688661	-91.73269635	5041153.6152	598980.6451	2	R	V
98	45.49789735	-91.73129452	5039045.6983	599123.4610	3	M	V
132	45.51057756	-91.73086401	5040454.9596	599134.8348	2	S	V
178	45.51058997	-91.73004505	5040457.3496	599198.7835	9	R	V
607	45.50436747	-91.72248113	5039775.4215	599800.6123	2	S/M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	RANUNCULUS Aquatilis
237	45.50945076	-91.72919082	5040331.8426	599267.5118	3	R 1	
409	45.51409441	-91.72687489	5040850.6030	599440.2378	2	S/M 1	
63	45.51688661	-91.73269635	5041153.6152	598980.6451	2	R V	

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	SAGITTARIA	GRAMINEA
651	45.49461568	-91.71972640	5038695.4573	600033.0824	2	M		1

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	SAGITTARIA LATIFOLIA
660	45.50268940	-91.71915304	5039593.1345	600063.5774	2	M V	

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	SAGITTARIA
4	45.53237113	-91.73727020	5042868.2726	598596.3558	2	M	1
681	45.49465265	-91.71727020	5038702.6263	600224.9294	2	M	1
26	45.53239605	-91.73563165	5042873.0550	598724.2530	4	M	V
836	45.50054589	-91.70843825	5039368.4032	600904.4760	3	M	V
843	45.50113395	-91.70763684	5039434.7419	600966.0355	3	M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	SCHOENOPLECTUS ACUTUS
839	45.49881844	-91.70838600	5039176.5550	600911.6443	2	M	1
836	45.50054589	-91.70843825	5039368.4032	600904.4760	3	M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	SCHOENOPLECTUS TABERNAEMONTANI
660	45.50268940	-91.71915304	5039593.1345	600063.5774	2	M V	

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	SPARGANIUM EURYCARPUM
63	45.51688661	-91.73269635	5041153.6152	598980.6451	2	R	1
648	45.50037381	-91.71990174	5039334.9476	600009.1871	2	M	V
677	45.48542730	-91.71780877	5037677.0507	600199.2077	2	S	V
735	45.49181048	-91.71472659	5038390.0480	600428.7238	5	R	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	SPIRODELA POLYRHIZA
14	45.53295940	-91.73646865	5042934.6126	598657.9135	4	M	1
15	45.53238359	-91.73645092	5042870.6635	598660.3048	4	M	1
34	45.53298430	-91.73483008	5042939.3941	598785.8109	7	R/M	1
42	45.51513432	-91.73428137	5040956.9884	598859.9188	2	M	1
49	45.51572256	-91.73348003	5041023.3270	598921.4771	1	M	1
98	45.49789735	-91.73129452	5039045.6983	599123.4610	3	M	1
460	45.51410679	-91.72605588	5040852.9930	599504.1864	3	M	1
509	45.51239174	-91.72518407	5040663.5369	599575.3057	4	M	1
651	45.49461568	-91.71972640	5038695.4573	600033.0824	2	M	1
679	45.49580428	-91.71730521	5038830.5247	600220.1508	2	M	1
839	45.49881844	-91.70838600	5039176.5550	600911.6443	2	M	1
3	45.53294694	-91.73728793	5042932.2218	598593.9652	3	M	V
16	45.53180779	-91.73643320	5042806.7155	598662.6954	6	M	V
25	45.53297185	-91.73564937	5042937.0030	598721.8618	4	M	V
26	45.53239605	-91.73563165	5042873.0550	598724.2530	4	M	V
33	45.51569769	-91.73511809	5041018.5473	598793.5804	2	M	V
47	45.51687418	-91.73351540	5041151.2249	598916.6966	4	M	V
508	45.51296755	-91.72520167	5040727.4858	599572.9155	3	M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	STUCKENIA PECTINATA
495	45.49395342	-91.72543993	5038614.7830	599587.8293	12	R	1
496	45.52563535	-91.72558896	5042134.3604	599520.3266	4	R	1
607	45.50436747	-91.72248113	5039775.4215	599800.6123	2	S/M	1
718	45.49294982	-91.71558026	5038515.5578	600359.9960	2	M	1
733	45.48373677	-91.71530052	5037492.3704	600398.2224	6	S	1
177	45.51116578	-91.73006270	5040521.2985	599196.3931	2	S	2
608	45.50379166	-91.72246357	5039711.4727	599803.0017	3	S/M	2
63	45.51688661	-91.73269635	5041153.6152	598980.6451	2	R	V
73	45.52611194	-91.73216006	5042179.1834	599006.3466	4	S	V
504	45.52102888	-91.72544809	5041622.7696	599539.4517	5	R	V
637	45.49460335	-91.72054514	5038693.0681	599969.1329	1	R	V
678	45.48485149	-91.71779126	5037613.1021	600201.5971	3	M/S	V
194	45.50137703	-91.72976278	5039434.1705	599237.0211	2	R	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	TYPHA ANGUSTIFOLIA
41	45.51571013	-91.73429906	5041020.9374	598857.5288	2	M	1
42	45.51513432	-91.73428137	5040956.9884	598859.9188	2	M	1

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	TYPHA LATIFOLIA
839	45.49881844	-91.70838600	5039176.5550	600911.6443	2	M V	

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	UTRICULARIA GIBBA
836	45.50054589	-91.70843825	5039368.4032	600904.4760	3	M	1
771	45.49819358	-91.71164374	5039103.0473	600658.2367	4	M	V
839	45.49881844	-91.70838600	5039176.5550	600911.6443	2	M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	UTRICULARIA VULAGARIS
648	45.50037381	-91.71990174	5039334.9476	600009.1871	2	M	1
829	45.49823037	-91.70918737	5039110.2159	600850.0847	3	M	1
836	45.50054589	-91.70843825	5039368.4032	600904.4760	3	M	1
843	45.50113395	-91.70763684	5039434.7419	600966.0355	3	M	1
649	45.49979800	-91.71988420	5039270.9989	600011.5771	3	M	V
839	45.49881844	-91.70838600	5039176.5550	600911.6443	2	M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	VALLISNERIA AMERICANA
21	45.52892877	-91.73634458	5042486.9733	598674.6500	5	S/R	1
94	45.51401999	-91.73178896	5040836.2614	599056.5452	4	S	1
95	45.51344419	-91.73177129	5040772.3136	599058.9356	3	S/R	1
96	45.49962478	-91.73134747	5039237.5446	599116.2927	4	R	1
125	45.51518403	-91.73100526	5040966.5497	599115.7139	3	R	1
126	45.51460822	-91.73098761	5040902.6008	599118.1035	4	R	1
131	45.51115337	-91.73088167	5040518.9085	599132.4443	2	S	1
133	45.50942595	-91.73082870	5040327.0629	599139.6150	2	S	1
134	45.50885014	-91.73081105	5040263.1141	599142.0047	3	R	1
136	45.50712271	-91.73075809	5040071.2675	599149.1748	4	M	1
137	45.50654690	-91.73074044	5040007.3186	599151.5646	4	M	1
140	45.50021300	-91.73054632	5039303.8828	599177.8513	3	R	1
174	45.51289321	-91.73011564	5040713.1452	599189.2230	3	R	1
176	45.51174159	-91.73008034	5040585.2474	599194.0036	3	S	1
177	45.51116578	-91.73006270	5040521.2985	599196.3931	2	S	1
180	45.50943835	-91.73000976	5040329.4519	599203.5634	4	R	1
182	45.50828674	-91.72997447	5040201.5553	599208.3434	5	R	1
186	45.50598350	-91.72990390	5039945.7599	599217.9029	2	R	1
188	45.50483188	-91.72986862	5039817.8622	599222.6823	6	R	1
193	45.50195284	-91.72978042	5039498.1193	599234.6312	5	R	1
225	45.51636046	-91.72940250	5041099.2272	599238.8301	10	M/R	1
237	45.50945076	-91.72919082	5040331.8426	599267.5118	3	R	1
294	45.51003897	-91.72838950	5040398.1817	599329.0708	5	R	1
342	45.51811268	-91.72781729	5041295.8539	599359.5568	5	R	1
343	45.51753687	-91.72779966	5041231.9050	599361.9473	6	M/R	1
345	45.51638526	-91.72776440	5041104.0083	599366.7284	4	M/R	1
348	45.51465783	-91.72771153	5040912.1615	599373.8986	2	M/R	1
386	45.53021704	-91.72736835	5042641.1689	599373.3030	10	R	1
456	45.52044069	-91.72624959	5041556.4301	599477.8934	5	M/R	1
457	45.51641003	-91.72612631	5041108.7886	599494.6258	2	S	1
458	45.51525841	-91.72609109	5040980.8908	599499.4064	2	S/M	1
504	45.52102888	-91.72544809	5041622.7696	599539.4517	5	R	1
509	45.51239174	-91.72518407	5040663.5369	599575.3057	4	M	1
576	45.52335686	-91.72388023	5041883.3463	599657.7867	2	M	1
577	45.52278105	-91.72386263	5041819.3974	599660.1779	5	M/R	1
606	45.50724653	-91.72256897	5040095.1665	599788.6625	2	R	1
608	45.50379166	-91.72246357	5039711.4727	599803.0017	3	S/M	1
616	45.49400286	-91.72216504	5038624.3410	599843.6249	5	R	1
617	45.48709310	-91.72195441	5037856.9528	599872.2957	2	M	1
635	45.50151310	-91.72075565	5039460.4560	599940.4586	2	M	1
654	45.48828173	-91.71953359	5037992.0178	600059.3643	4	S	1
665	45.49002150	-91.71876750	5038186.2545	600116.1459	2	M	1
667	45.49406452	-91.71807142	5038636.2877	600163.3698	3	R	1
674	45.48888219	-91.71791382	5038060.7455	600184.8728	8	R	1
677	45.48542730	-91.71780877	5037677.0507	600199.2077	2	S	1
678	45.48485149	-91.71779126	5037613.1021	600201.5971	3	M/S	1
681	45.49465265	-91.71727020	5038702.6263	600224.9294	2	M	1

697	45.48428798	-91.71695517	5037551.5414	600267.9352	5	S	1
700	45.49408914	-91.71643397	5038641.0660	600291.2677	5	M	1
717	45.49352563	-91.71559775	5038579.5064	600357.6065	2	S/M	1
718	45.49294982	-91.71558026	5038515.5578	600359.9960	2	M	1
773	45.49358706	-91.71150415	5038591.4537	600677.3523	3	M	1
775	45.49243542	-91.71146925	5038463.5542	600682.1316	4	M	1
777	45.49013216	-91.71139947	5038207.7576	600691.6888	5	M	1
792	45.49532677	-91.71073774	5038785.6903	600734.1338	2	M	1
804	45.48553789	-91.71044134	5037698.5521	600774.7505	7	S	1
809	45.49706648	-91.70997129	5038979.9276	600790.9147	2	M	1
810	45.49649067	-91.70995386	5038915.9790	600793.3039	2	M	1
812	45.49533903	-91.70991899	5038788.0795	600798.0833	4	M	1
819	45.49130832	-91.70979698	5038340.4348	600814.8088	5	M/S	1
8	45.53006792	-91.73719927	5042612.4795	598605.9194	6	M	2
92	45.51517161	-91.73182429	5040964.1593	599051.7650	2	S	2
181	45.50886255	-91.72999211	5040265.5041	599205.9538	4	R	2
184	45.50713512	-91.72993918	5040073.6576	599213.1235	2	R	2
627	45.48825707	-91.72117087	5037987.2401	599931.4664	2	M	2
629	45.48710544	-91.72113579	5037859.3418	599936.2444	3	M	2
641	45.48711778	-91.72031717	5037861.7314	600000.1931	3	M	2
642	45.48654196	-91.72029963	5037797.7817	600002.5828	2	M	2
653	45.49000918	-91.71958617	5038183.8659	600052.1966	2	M	2
791	45.49590259	-91.71075518	5038849.6401	600731.7444	5	M	2
793	45.49475096	-91.71072030	5038721.7417	600736.5232	3	M	2
795	45.49359932	-91.71068542	5038593.8422	600741.3022	4	M	2
796	45.49244769	-91.71065055	5038465.9439	600746.0804	3	M	2
814	45.49418740	-91.70988413	5038660.1811	600802.8619	5	M	2
20	45.52950457	-91.73636231	5042550.9212	598672.2585	4	M	V
63	45.51688661	-91.73269635	5041153.6152	598980.6451	2	R	V
132	45.51057756	-91.73086401	5040454.9596	599134.8348	2	S	V
619	45.50898631	-91.72180273	5040289.4029	599845.4420	2	S/M	V

SAMPLE_PT	LAT	LONG	Y_PROJ	X_PROJ	DEPTH	SED	WOLFFIA COLUMBIANA
1	45.53235867	-91.73808947	5042865.8824	598532.4076	2	M	1
2	45.53178286	-91.73807173	5042801.9333	598534.7984	2	M	1
4	45.53237113	-91.73727020	5042868.2726	598596.3558	2	M	1
6	45.53121952	-91.73723473	5042740.3755	598601.1380	2	M	1
14	45.53295940	-91.73646865	5042934.6126	598657.9135	4	M	1
15	45.53238359	-91.73645092	5042870.6635	598660.3048	4	M	1
49	45.51572256	-91.73348003	5041023.3270	598921.4771	1	M	1
50	45.51514676	-91.73346234	5040959.3791	598923.8678	2	M	1
679	45.49580428	-91.71730521	5038830.5247	600220.1508	2	M	1
16	45.53180779	-91.73643320	5042806.7155	598662.6954	6	M	V
27	45.53124444	-91.73559622	5042745.1579	598729.0347	4	M	V
28	45.53066863	-91.73557850	5042681.2088	598731.4259	8	M	V