

Lake Owen Essential Plant Habitat Overview

Emergent and Floating Plants

Emergent and floating plants provide key habitats for many organisms and protect water quality by stabilizing shorelines, banks, and bottom sediments. An overview is provided about emergent and floating plants.

Emergent plants

Emergent plants are plants that have leaves that extend above the water surface. They typically grow in shallow water, but some can thrive in more than 1 foot of water. Some smaller, narrow-leaved emergent plants can also grow submersed in shallow water (arrowheads). Emergent plants provide vital habitats for invertebrates, fish, amphibians, reptiles, birds, and mammals. These plants have extensive spongy tissue and air spaces that make them buoyant and serve as nesting material for various organisms, such as loons or muskrats. The buoyant nests float up and down with changing water levels. Emergent plants can also reduce the energy in waves that protect shorelines from bank erosion and help stabilize lake bottom sediments with extensive root/rhizome networks. Emergent plants are also adapted with flexible reproductive strategies. In low water, they reproduce with seeds dispersed in the exposed sediment. In high water times, they spread their roots and/or rhizomes.



Emergent plants near shore in a bay on Lake Owen. (Picture from Ed Ronkowski)



Loon nest built with emergent plant material.

There are several emergent plants common in Lake Owen. The common species include bur-reed (*Sparganium sp.*), broad-leaved cattail (*Typha sp.*), various sedges (*Carex sp.*), three-way sedge (*Dulichium arundinaceum*), arrowhead (*Sagittaria sp.*), wild calla (*Calla palustris*), softstem and hardstem bulrush (*Schoenoplectus sp.*).¹

¹ Pictures of emergent plants from Gary Fewless and Peter Dzuik.



Sparganium eurycarpum-Common bur-reed



Typha latifolia-Broad-leaved cattail



Carex sp.-sedges



Dulichium arundinaceum-three way sedge



Sagittaria sp.-arrowheads



Calla palustris-wild calla



Schoenoplectus acutus-hardstem bulrush



Schoenoplectus tabernaemontanii-softstem bulrush

Floating Plants

Floating plants have leaves that float on the water surface. These leaves emerge from a rhizome that is in the lake sediment. The floating leaves are typically round or oval with smooth edges to reduce tearing in wind or waves. These plants provide shade for fish and a habitat for invertebrates, frogs, and fish. The leaves can reduce the energy in waves before they reach the lake bank, helping reduce erosion. The rhizomes can also help stabilize the lake's bottom sediment through an extensive network under the sediment surface.

Many floating-leaved plants have fragrant flowers that provide nectar for insects. They also are aesthetically pleasing to many.



A bed of floating-leaved plants in a bay on Lake Owen.(Picture from Ed Ronkowski)



Northern leopard frogs using the cover of floating and emergent plants.



White water lily flowers in Otter Bay. (Picture from Ed Ronkowski)

There are several species of floating leaved plants in Lake Owen. These plants include white water lily (*Nymphaea odorata*), floating pondweed (*Potamogeton natans*), spatterdock (*Nuphar variegata*), watershield (*Brasneria shreberi*), water smartweed (*Polygonum amphibium*), and bur-reed (*Sparganium* sp.). Many of these plants observed are shown below for reference.²



Nymphaea odorata-White water lily



Potamogeton natans-floating pondweed



Nuphar variegata-spatterdock



Brasneria shreberi-watershield



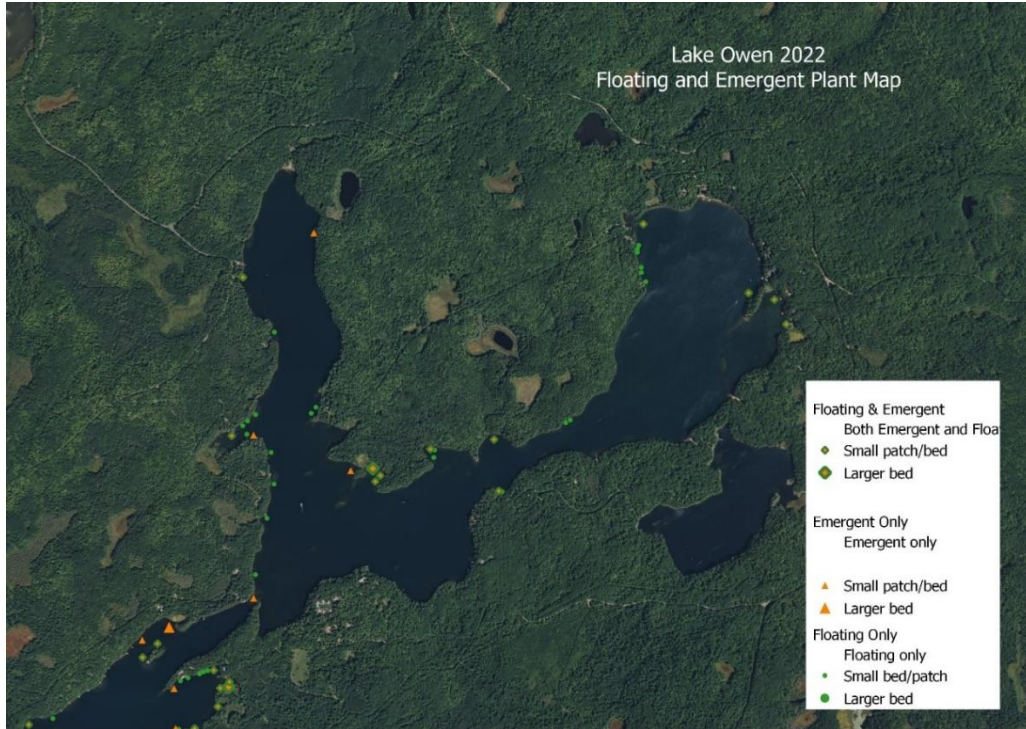
Polygonum amphibium -water smartweed



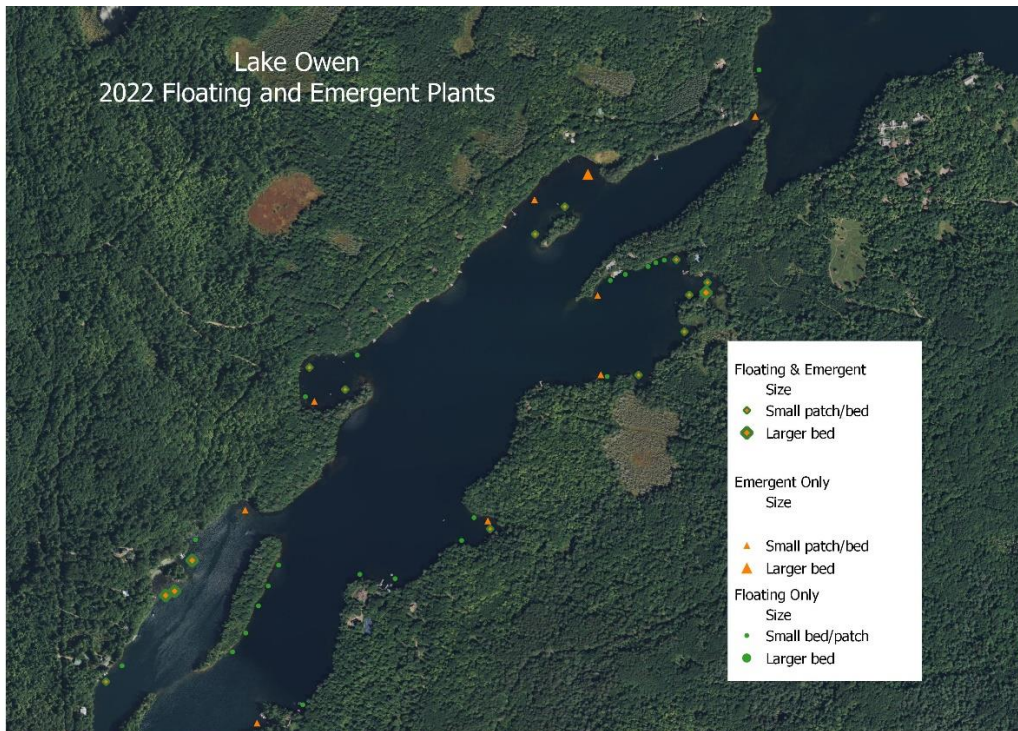
Sparganium sp.-bur-reed (floating leaves form)

² Pictures from Paul Skawinski.

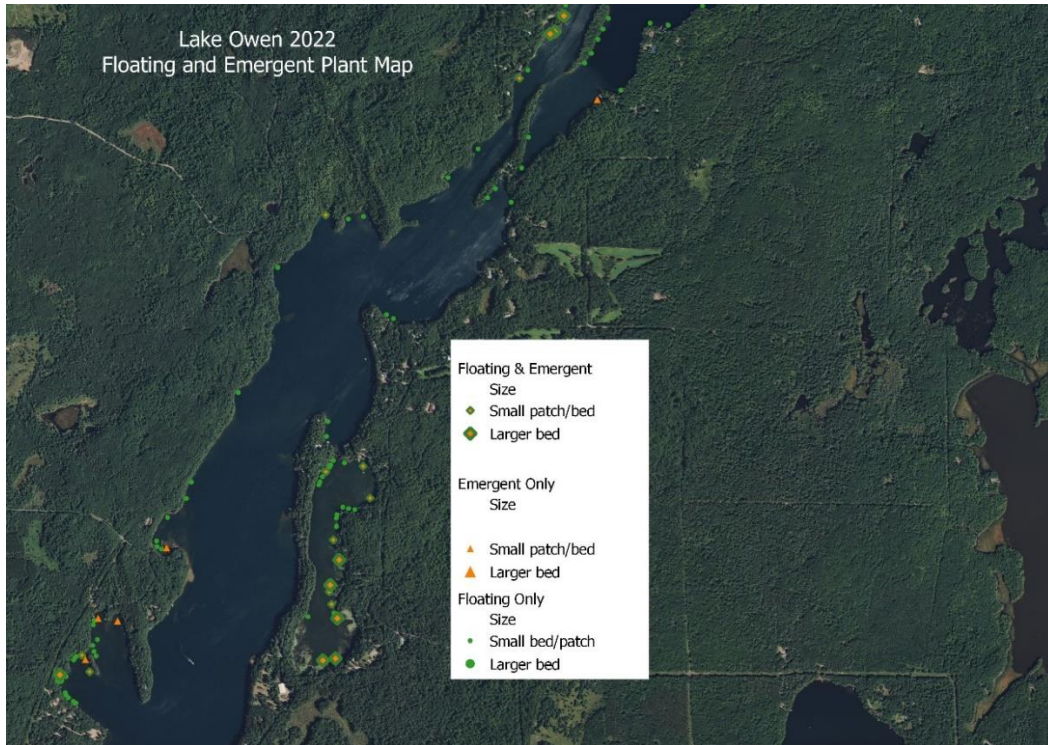
Maps of emergent and floating vegetation in Lake Owen (separated by regions)



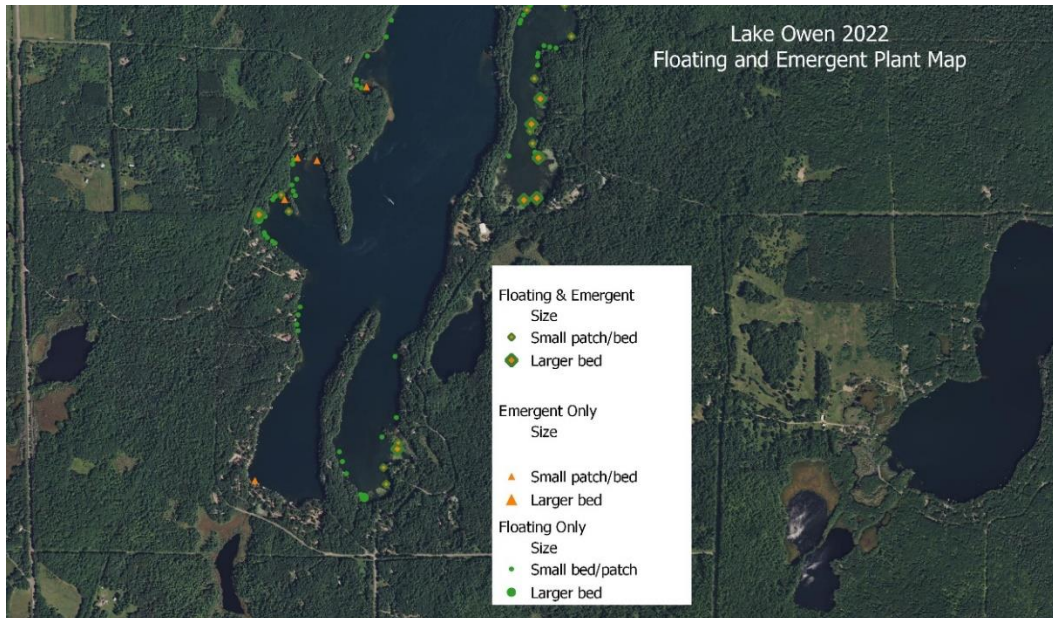
North Lake Owen



Central Lake Owen



South-central Lake Owen



South Lake Owen

Lake Owen Recognized Essential Plant Habitat Areas-Floating/Emergent Plants



Essential emergent/floating vegetation habitats A-F.



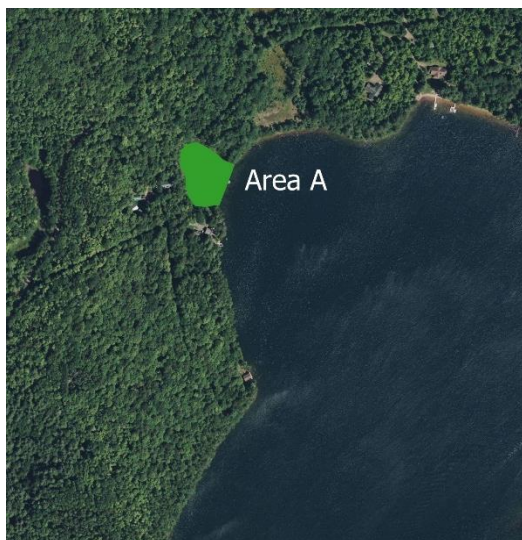
Essential emergent/floating vegetation habitat G.



Essential emergent/floating vegetation habitats H-K and Otter Bay.

Summary of Essential Emergent/Floating Plant Habitat Areas

Emergent/Floating Plant Area A



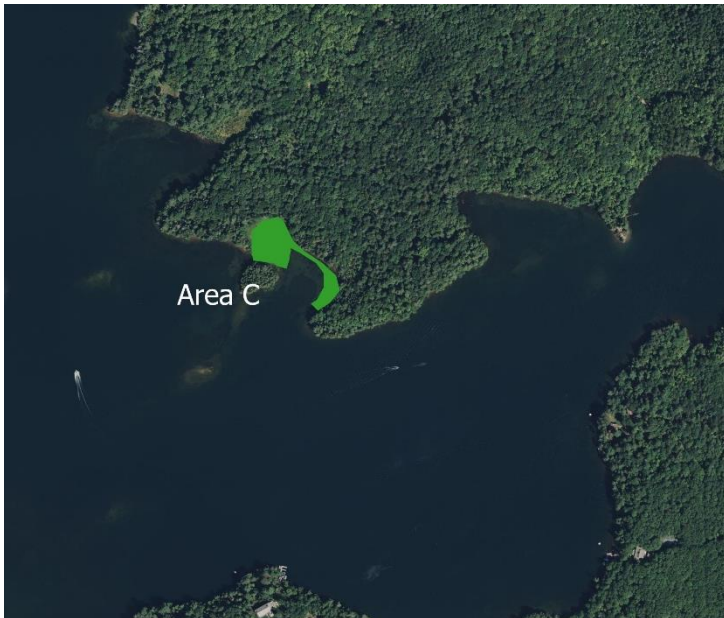
Area A is in a bay at the northeast end of Lake Owen. It has extensive coverage of floating plants in much of the bay. Most of the shoreline contains moderate to dense emergent plants. There is one residence in this bay, but most of the bay is unaffected by human activity. The most common plants are white water lily, spatterdock, cattail, and bur-reed.

Emergent/Floating Plant Area B



Area B is a bay just north of the National Forest campground. It has a few residents and a wetland on this bay's southern portion. There are extensive emergent plants and sporadic coverage of floating plants. The most common plants are white water lilies, floating bur-reed leaves, spatterdock, floating pondweed, cattail, and emergent bur-reed. There is also extensive coverage of submerged plants in this bay.

Emergent/Floating Plant Area C



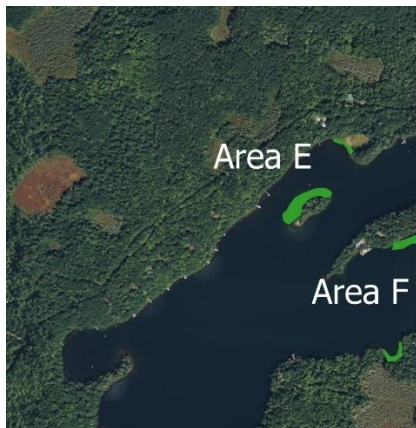
Area C is just north of Loon island. There is a wetland as a part of this essential habitat. There are sparse floating plants and extensive emergent plants. The floating plant is white water lily, and the emergent plants are cattail, bur-reed, and bulrush. There is no development here, and the bay is secluded and isolated from boat traffic.

Emergent/Floating Plant Area D



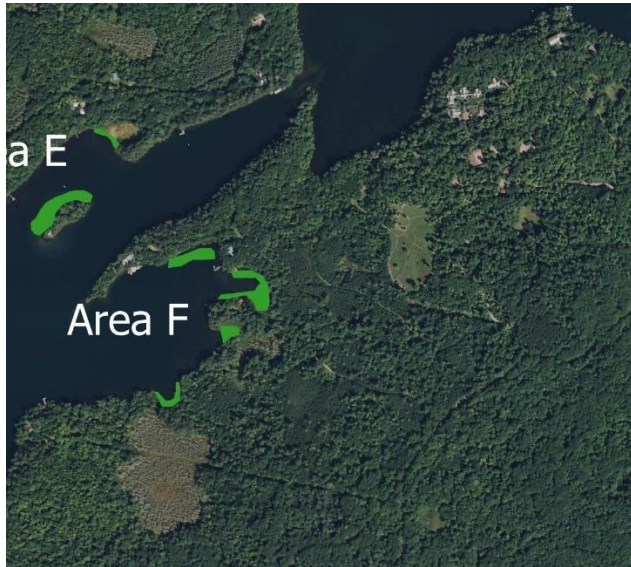
Area D is in a bay on the west shoreline, south of the outlet boat launch. There is a wetland that is deep in the bay. One resident is present, with limited boat traffic. This bay has exceptional habitat with a diverse cover of floating and emergent plants. Much of the bay has floating plant cover, which transitions into a denser cover of plants leading into a fully vegetated wetland. The floating plants include floating pondweed, watershield, and the emergent plants of cattail, bur-reed, and three-way sedge.

Emergent/Floating Plant Area E



Area E includes the northwest border of red rock island and the wetland to the north of the island. The area west of the island has good coverage of floating plants and some emergent plants. The wetland to the north has numerous emergent plants. The most common floating plants are white water lilies, bur-reed, and watershield. The common emergent plants are cattail, arrowhead, bur-reed, and sedges.

Emergent/Floating Plant Area F



Area F combines small bays that are part of a bigger bay south of the narrows on the east shore. The largest portion is adjacent to a wetland deep into the bay. Numerous floating and emergent plants are present in this area. Floating plants include white water lily, spatterdock, bur-reed, and floating pondweed. Emergent plants include cattail, blue-flag iris, sedge, bur-reed, three-way sedge, soft-stem bulrush, arrowhead, and wild calla. This area is likely key habitat for a wide range of organisms. There is one resident in the largest bay of the area and a couple of residents in the northern portion of Area F. The two southern bays have no development.

Emergent/Floating Plant Area G



Area G is comprised on a small bay to the west of Fire Island. There are floating plants out into the bay that transitions into a small wetland toward shore. The common floating plant is white water lily, along with the emergent plants bur-reed, cattail, blue flag iris, and sedge on the edge of the wetland. One resident on the northern portion of this area appears to have little impact on the plant community, with a pier and some boat traffic on the very edge of the plants.

Emergent/Floating Plant Area-Otter Bay



Most of Otter Bay has plant growth that includes extensive floating plant coverage and emergent plants along the shoreline. Since most of the bay has plant growth, it was combined into one area to keep it simpler. Much of the southern portion and along the eastern shore has floating plants. These same areas have emergent plant growth along much of the shoreline. There is limited development where the plants occur. The most common floating plants include white water lily, spatterdock, bur-reed, and watershield. Emergent plants include cattail, blue flag iris, and sedge. This Otter Bay area of Lake Owen has the most extensive plant community found in the lake.

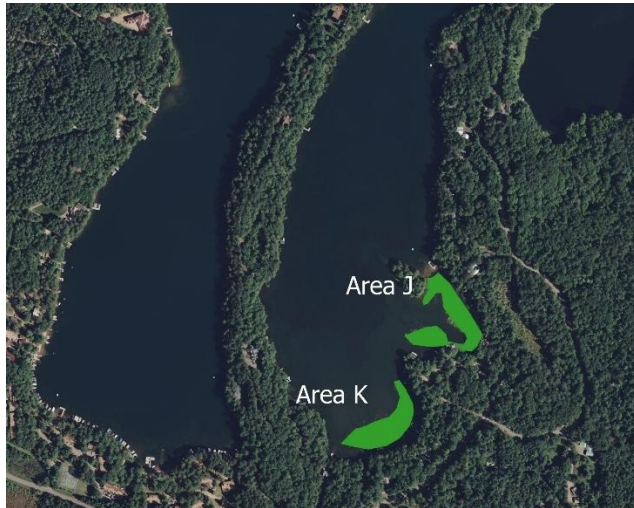
Emergent/Floating Plant Areas H and I



Areas H and I occur in Agnus Bay. There are three portions to each area within the bay, with each containing unique plants. Area H (the northern portion in Agnus Bay) contains the floating plants white water lily and two beds of water smartweed. Common emergent plants include cattail and blue flag iris.

Area I (the southern portion of Agnus Bay) contains these same plants, floating pondweed, and spatterdock. Emergent plants present include arrowhead and blue flag iris.

Emergent/Floating Plant Area J and K



Areas J (northern portion) and K (southern portion) occur in the far southeast bay of Lake Owen. Area J is a unique plant community with muck, sand, and rock substrates giving rise to numerous floating and emergent plants. There is some development in this bay, but boat traffic appears limited. Floating plants include white water lily, a large area of floating pondweed, and the emergent plants common bur-reed, soft stem bulrush, blue flag iris, and sedges.

Area K is the southern portion of this bay and has a fair amount of development, yet extensive floating plant beds are present. The floating plant community comprises mostly white water lilies, with a fair amount of floating pondweed in the eastern portion. Cattail is the dominant emergent plant, with a small bed of this present.

Other plant habitats

Submerged plants (grow below the surface) provide important habitats for organisms ranging in size from the smallest plankton to fish and waterfowl. These plants provide substrate to grow, cover, and food. The littoral zone (zone in the lake that harbors plants and is determined largely by depth) is narrow in Lake Owen. Also, much of the lake bottom substrate is hard and low-nutrient, limiting the habitat for many plant species. For this reason, the limited areas with consistent growth of submerged plants are important to the lake ecosystem.



Smallmouth bass amongst flat-stem pondweed (left) and a variety of submersed plants that show cover habitat (right) in Lake Owen. Pictures from Ed Ronkowski.



A dragonfly nymph is feeding on a minnow.



Waterfowl foraging in a plant bed on Lake Owen (picture from Ed Ronkowski).

The map below designates essential submerged plant habitats (in red). These are areas that have a high diversity of submerged plants. They are also areas that may contain more sensitive plants that can thrive in hard, lower-nutrient substrates. Areas that have consistent, large area coverage of plants are designated due to the limited plant coverage in much of Lake Owen.



Rock and Sand (low nutrient/hard substrates)

Hard, low-nutrient substrate in lakes is inhabited by adapted plants to grow in rock and/or sand substrates. The plants tend to be more sensitive to habitat change (eg. siltation of gravel substrate) than other aquatic plants. Common plants in Lake Owen associated with this habitat include plantain shoreweed (species of special concern), variable pondweed, *Chara sp.*, needle spikerush, brown fruited rush, and arrowhead rosettes. The pictures below provide a reference for these plant species.³

³ Pictures of plantain shoreweed, variable pondweed, *Chara sp.* and needle spikerush from Gary Fewless. The brown fruited rush and arrowhead rosette pictures from Paul Skawinski.



Littorella uniflora-plantain shoreweed



Potamogeton gramineus-variable pondweed



Chara sp.-muskgrasses



Eleocharis acicularis-needle spikerush



Juncus pelocarpus-brown-fruited rush



Sagittaria cuneata-arrowhead (rosette)

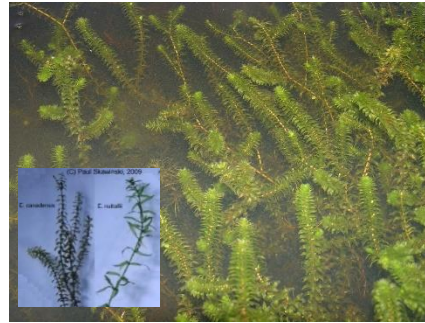
Sand and Muck (higher nutrient/softer substrates)

Softer, higher nutrient sediments such as a mixture of sand and muck, or only muck, provide habitat for a wider range of aquatic plants. Some of these may be found in sand only habitat, but are more commonly found in softer, higher nutrient substrates. The common plants in Lake Owen include wild celery (found in sand and muck), common waterweed and slender waterweed (sand and muck), northern watermilfoil, and water marigold. The pictures below provide a reference for some species.⁴

⁴ Pictures of wild celery, common waterweed, and water marigold from Paul Skawinski. Picture of northern watermilfoil from Gary Fawless.



Vallisneria americana-wild celery



Elodea canadensis-common waterweed
(inset also shows *Elodea nuttallii*-slender waterweed)



Myriophyllum sibiricum-northern watermilfoil



Bidens beckii-water marigold

Depth can also be a factor in the types of plants growing. Some species can photosynthesize at deeper depths through adaptation to lower light intensity. Other species are associated with shallower depths due to the need for higher light intensity or floating or emergent species. The most common species associated with various depth ranges are outlined below.

Shallow depths (less than 3 feet)

The dominant species in shallow water are slender naiad (*Najas flexilis*), Chara sp., white water lily (*Nymphaea odorata*), variable pondweed (*Potamogeton gramineus*), wild celery (*Vallisneria americana*), arrowhead rosettes (*Sagittaria sp.*).

Moderate depths (4 to 12 feet)

The dominant species in moderate depths in Lake Owen are wild celery, flat-stem pondweed, fern pondweed, variable pondweed, northern watermilfoil, elodea, Chara sp., and water marigold.

Deep depths (greater than 12 feet)

The dominant species in deep water in Lake Owen are coontail, elodea, northern watermilfoil, fern pondweed, and flat-stem pondweed.

Some reference pictures for plants not shown in other sections are contained below.⁵



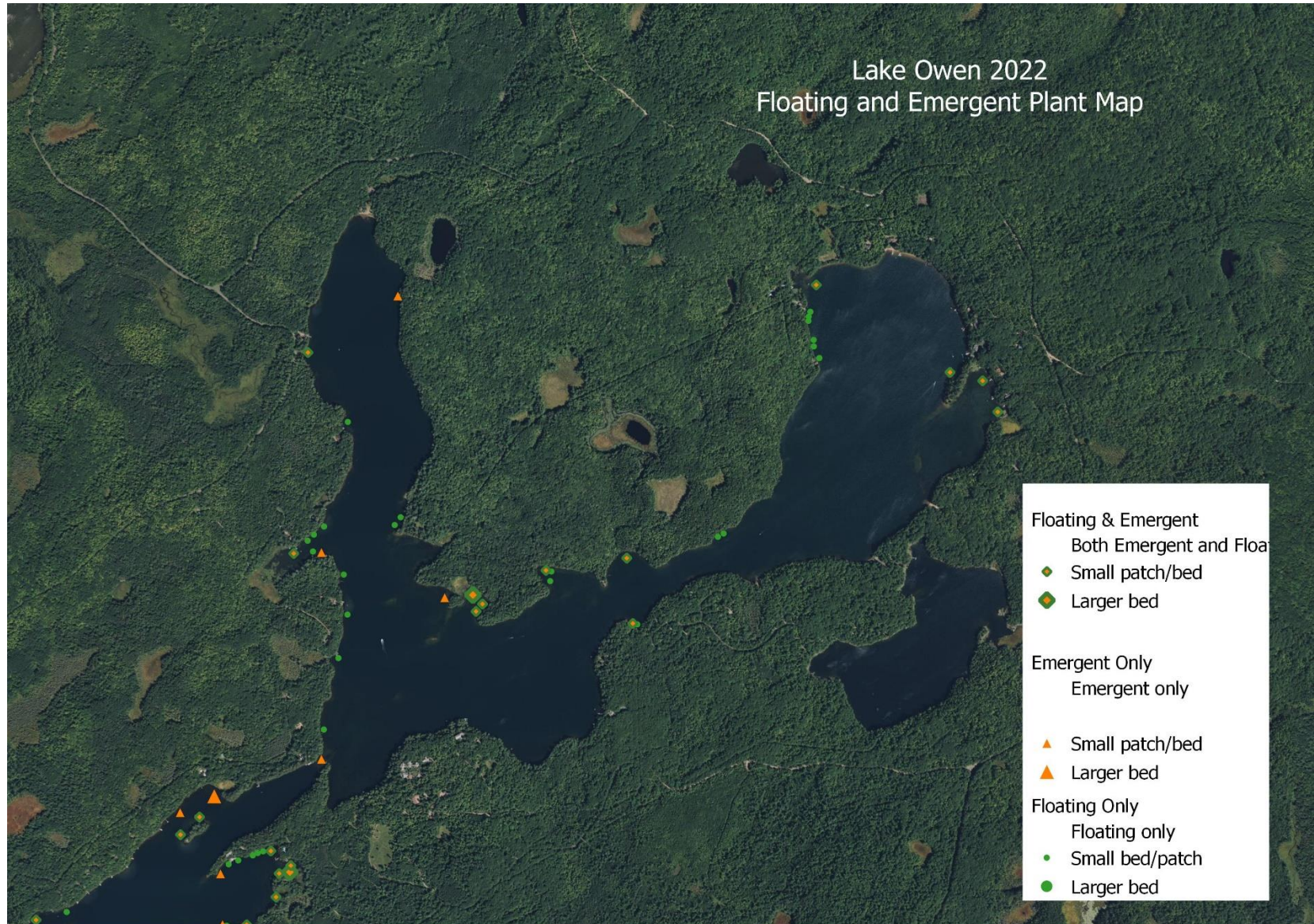
Potamogeton zosteriformis (flatstem pondweed)-left

Ceratophyllum demersum (coontail)-middle

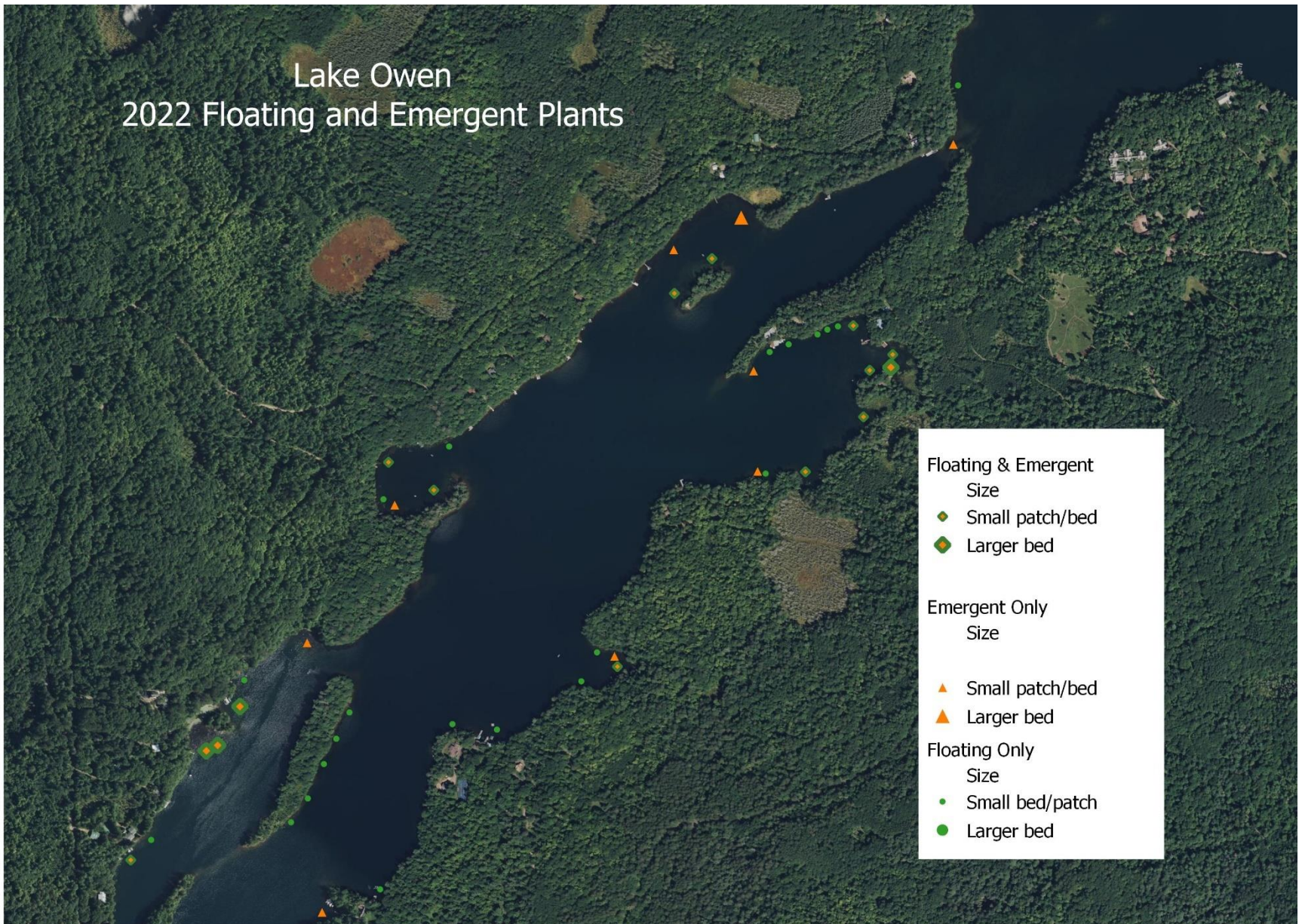
Potamogeton robbinsii (fern pondweed)-right

⁵ Photos from Paul Skawinski.

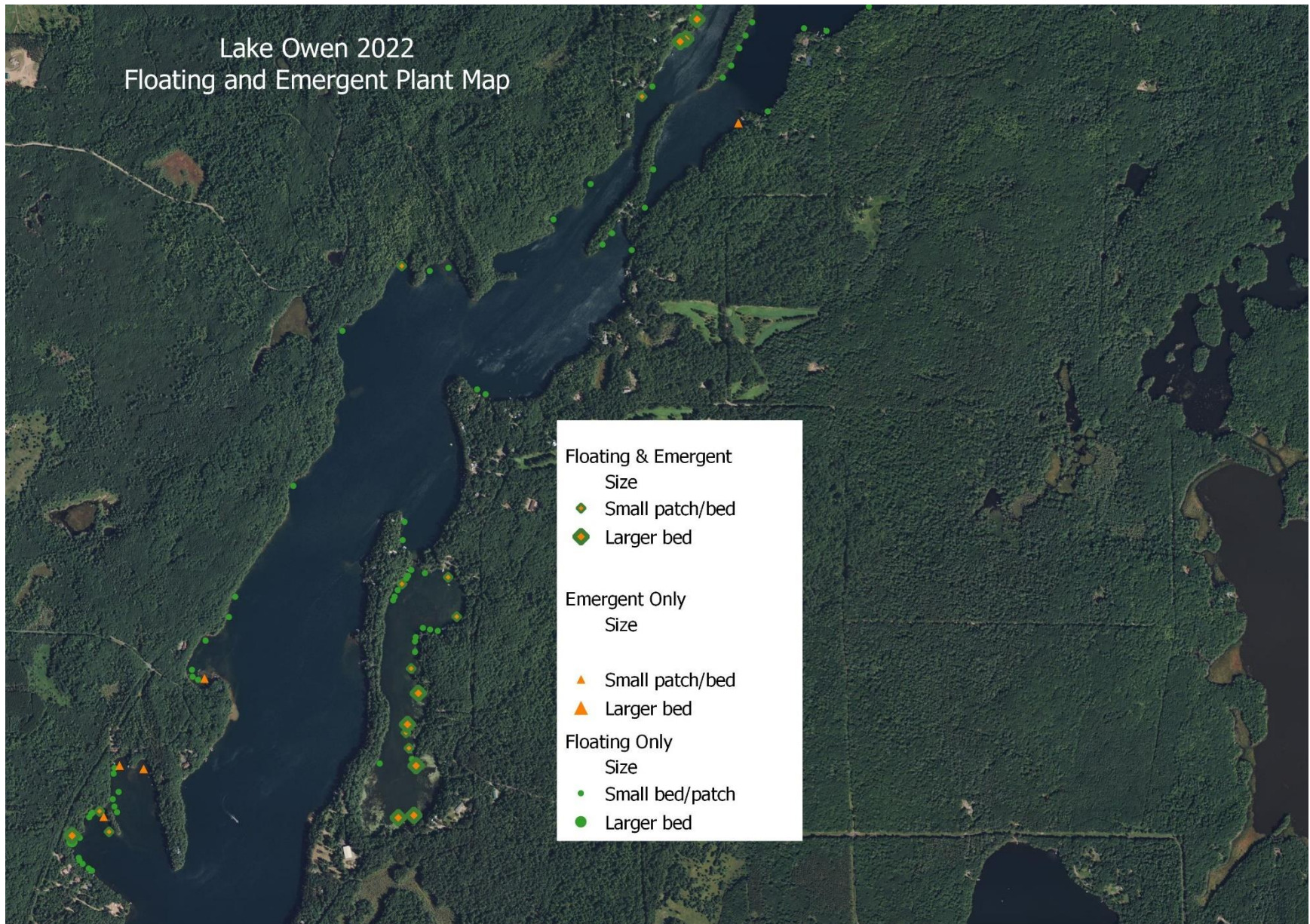
Full Page Maps



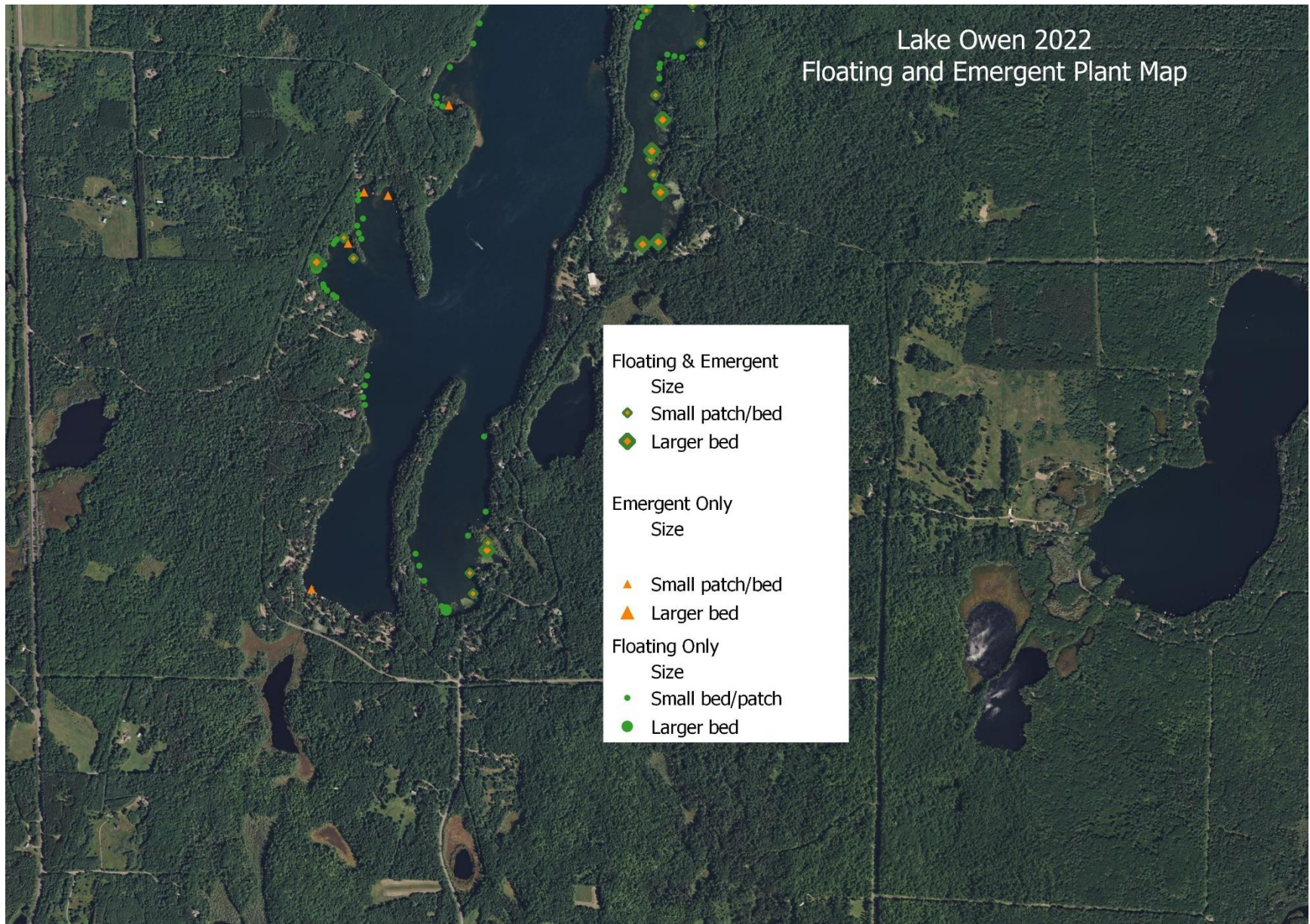
Lake Owen 2022 Floating and Emergent Plants



Lake Owen 2022
Floating and Emergent Plant Map



Lake Owen 2022
Floating and Emergent Plant Map



- Floating & Emergent
Size
 - Small patch/bed
 - Larger bed
- Emergent Only
Size
 - Small patch/bed
 - Larger bed
- Floating Only
Size
 - Small bed/patch
 - Larger bed

