DEPARTMENT OF NATURAL RESOURCES

What's growing by my dock? Not everything is a "weed".

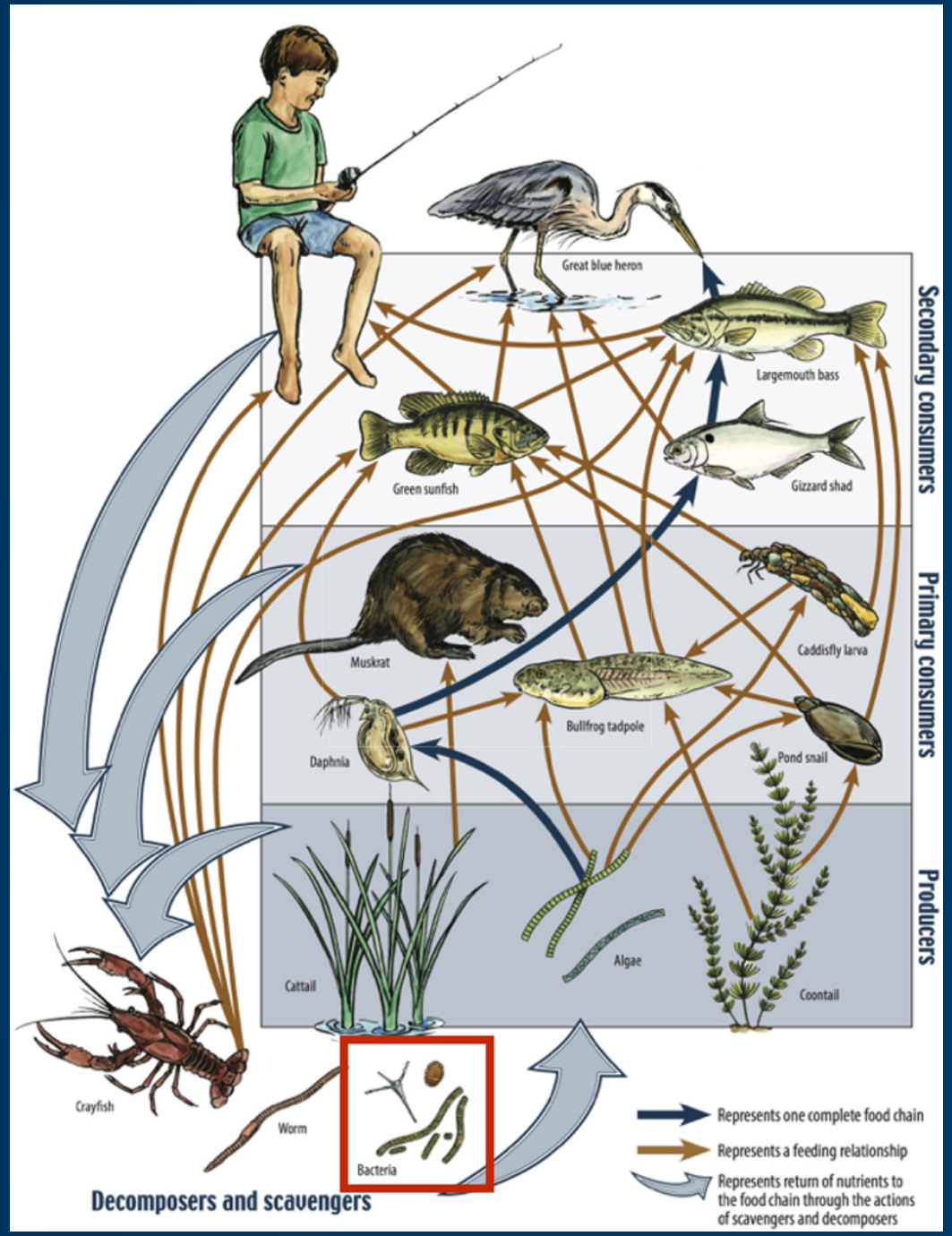
Nicole Kovar | AIS Specialist Sr

What makes Long Lake valuable to you?

What Are the Benefits of Aquatic Plants?

- Aquatic plants are misunderstood and under-valued part of lakes and rivers. Though many people would rather not have them in their favorite swimming spot or fishing hole, native aquatic plants provide varied environmental benefits to many lakes.
- **Aquatic plants are a natural part of most lake communities** and provide many benefits to fish, wildlife, and people. In lakes, life depends--directly or indirectly--on water plants. They are the primary producers in the aquatic food chain, converting the basic chemical nutrients in the water and soil into plant matter, which becomes food for all other life.
- Not everything is a “weed”. Native plants are a vital part of a healthy lake ecosystem.

Base of the food web



Aquatic Plants:
A vital part of a healthy lake ecosystem

Aquatic plants serve many important functions:

Provide fish food

Offer fish and invertebrate shelter

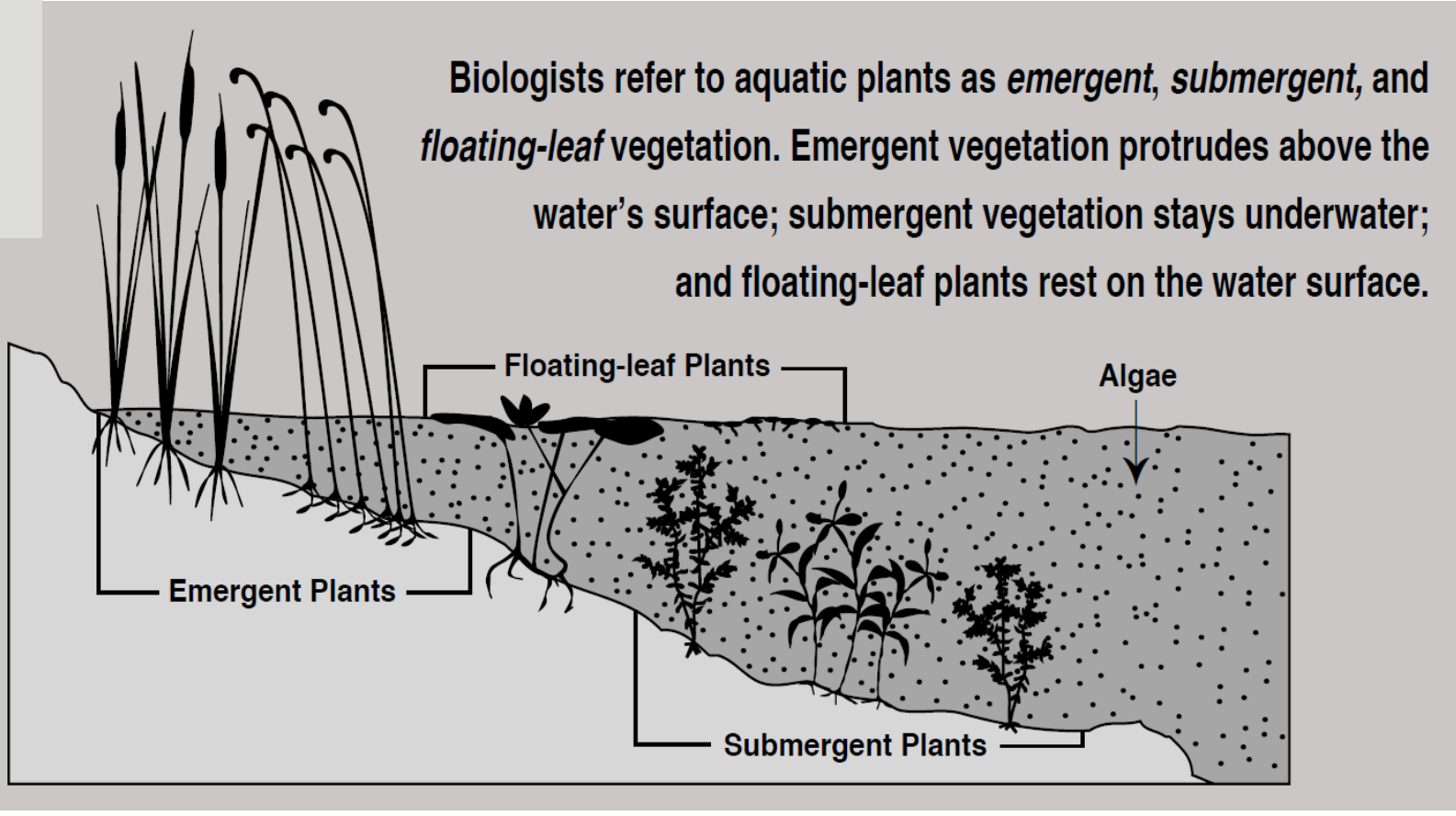
Improve water clarity and quality

Protect shorelines and lake bottoms

Provide food and shelter for waterfowl

Improve aesthetics

Provide economic value



Plants found in Long Lake

- Submersed Plants (Plants with most leaves growing beneath the water surface)
  - Bidens beckii -Water Marigold
  - Ceratophyllum demersum -Coontail
  - Elodea canadensis -Canadian waterweed
  - Fontinalis -Aquatic moss
  - Heteranthera dubia -Water Stargrass, Mud Plantain
  - Hippus vulgaris -Mare's tail
  - Myriophyllum sibiricum -Northern Watermilfoil
  - Myriophyllum verticillatum -Whorled Watermilfoil
  - Najas flexilis -Bushy Pondweed, Common Naiad
  - Potamogeton friesii -Fries' Pondweed
  - Potamogeton illinoensis -Illinois Pondweed
  - Potamogeton praelongus -White-stemmed Pondweed
  - Potamogeton richardsonii Claspingleaf Pondweed
  - Potamogeton strictifolius Straightleaved Pondweed
  - Potamogeton zosteriformis Flatstem Pondweed
  - Ranunculus aquatilis var. diffusus White water-crowfoot
  - Stuckenia pectinata Common Sago Pondweed
  - Utricularia vulgaris Greater bladderwort
  - Valisenaria americana Water Celery
  - Zosterella dubia Water stargrass
  - Robbins pondweed
  - Narrowleaf pondweed
  - Large Leaf pondweed
- Floating-leaf Plants (Plants with leaves that float on the water surface)
  - Nuphar variegata Yellow Water Lily
  - Nymphaea odorata ssp. tuberosa White Water Lily
  - Potamogeton gramineus Variable Pondweed
  - Potamogeton natans Floating Leaf Pondweed
- Free floating Plants
  - Lemna trisulca Star duckweed
  - Large duckweed, small duckweed and wolffia Watermeal
- Emergent Plants (Plants with leaves extending above the water surface)
  - Sparganium eurycarpum Giant Burreed
  - Typha latifolia Broad-leaved cattail
  - Equisetum fluviatile Horse's tail
  - Zizania palustris Northern wild rice
- Shoreline Plants (Plants associated with the wetland habitat)
  - Asclepias incarnata Swamp milkweed
  - Eleocharis acicularis Needle spikerush
  - Iris versicolor Blue Flag
  - Phalaris arundinacea Reed canary grass
  - Smartweed
- Macro Algae
  - Chara spp. Muskgrass
  - Nitella spp. Stonewort
  - Nitellopsis obtusa Starry Stonewort

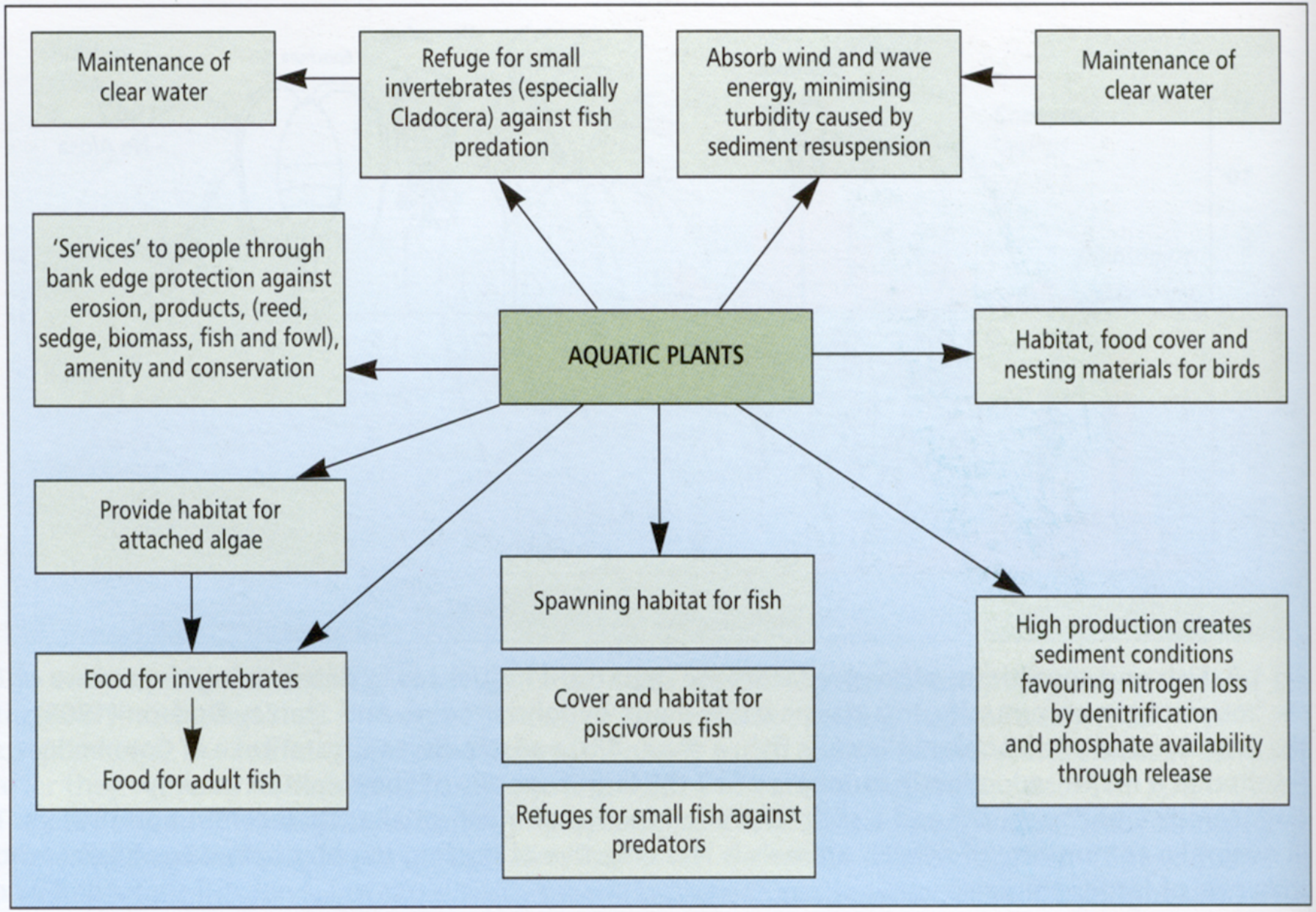
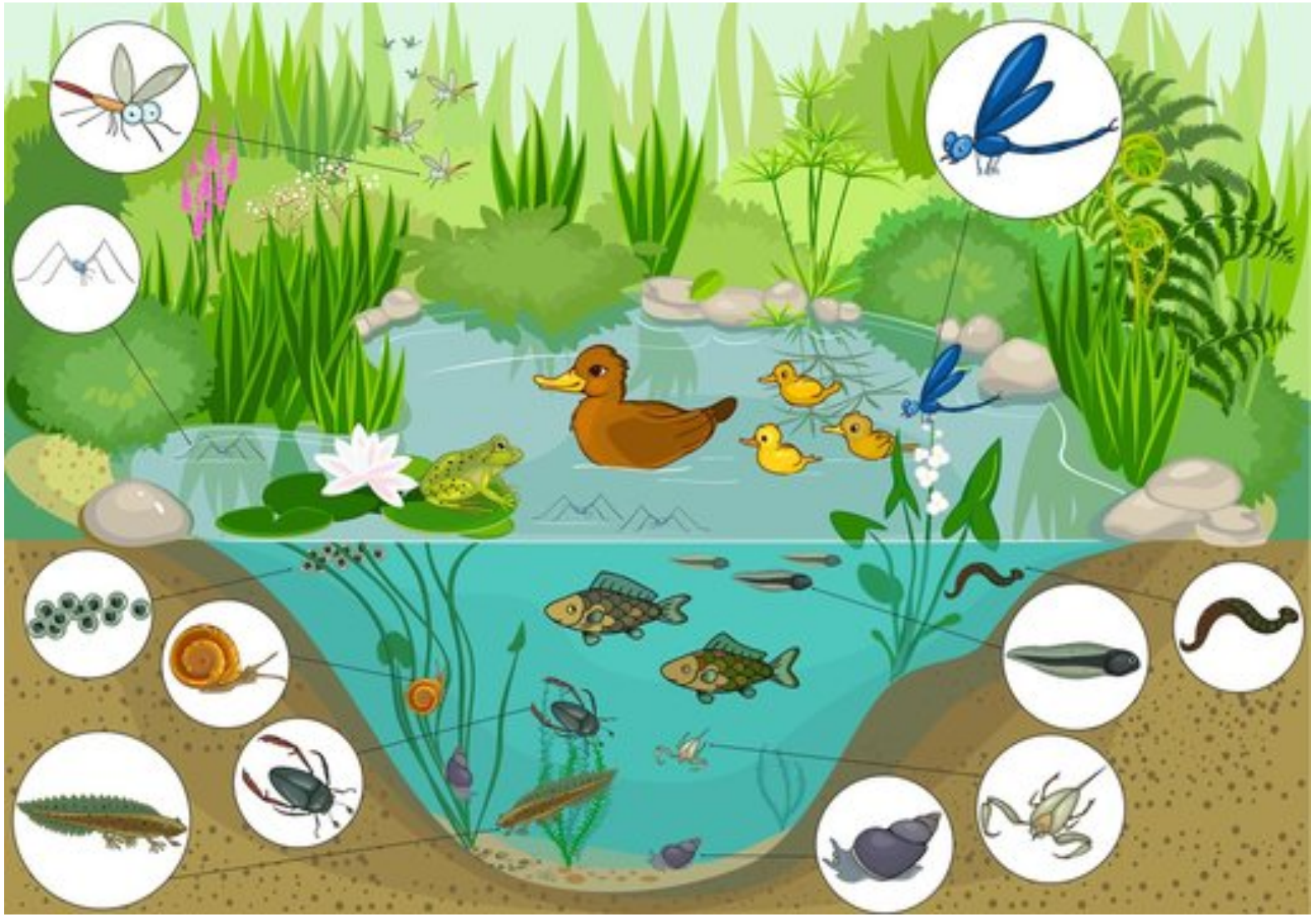


Fig 1.9 Links between aquatic plants and other organisms, including ourselves.

Food

- **Food** -- Aquatic plants are a food source for many insects, animals and fish.
- Many submerged plants produce seeds and tubers (roots), which are eaten by waterfowl. Bulrushes, sago pondweed, wild celery, watershield, arrowhead, smartweed, duckweed and wild rice are especially important duck foods. Submerged plants also provide habitat to many insect species and other invertebrates that are, in turn, important foods for brooding hens and migrating waterfowl.
- 100,000's of oogonia from chara in waterfowl stomachs during migration
- Songbirds use fluff from cattails as nest material and eat the seeds of many emergent plants.
- Otter, beaver, muskrats, turtles, moose and even bear graze on a variety of aquatic plants.
- Several kinds of invertebrates, especially aquatic insects, eat aquatic plants.
- Human use: Cattails have edible shoots and roots, and the pollen has been used in biscuits. Arrowheads form large edible tubers at the root ends. These "duck potatoes" were eaten by Native Americans. Watercress has many historic medicinal uses, and its spicy vegetation is still used in salads and garnishes. Water lily roots are a common source of food in many parts of the world and have been used as medicine. Even coontail has been used for medicinal purposes. Others include rice, cranberries, blueberries, fiber for rope, reeds for caning, herbs, medicinal compounds and aesthetic items such as flowers and colorful fruits and berries for decoration.



Home

Fish --shelter for young fish. Fish spawning areas for bass, sunfish, and yellow perch nesting during spring and early summer. Northern pike/musky spawn in marshy and flooded areas in early spring.

Wildlife – ducks, swans, muskrats and turtles for example. Emergent vegetation provides a habitat for certain songbirds, or wading birds that may nest at these sites or use them as feeding areas. Provide habitat for aquatic insects, snails and freshwater shrimp, which in turn supply food for fish and waterfowl. Many insects use the leaves of floating plants to deposit eggs and to feed.

Housing supplies – Sturdy emergent plants provide many birds and mammals with material for nests and dens. Humans construct baskets, mats, boats and even dwellings from cattail, rush and bulrush stems.

Cover– Young fish and amphibians use aquatic plants for cover from predatory fish and birds. This, coupled with the abundant food supply they offer, makes aquatic plants important nurseries for young fish, frogs and salamanders.


Waterbirds of the Lakes & Wetlands of Minnesota
Least Bittern
Horned Grebe
Sanderling
Common Loon
Red Knot
Osprey
Mallard
Great Black-backed Gull
Lesser Scaup
Common Moorhen
Gadwall
Red-bellied Woodpecker
Redhead
Bufflehead
Common Goldeneye
Northern Goshawk
Ring-necked Pheasant
Green Heron
Cooper's Hawk
Short-billed Dowitcher
Peregrine Falcon
Common Tern
Hooded Merganser
Black-bellied Plover
Belted Kingfisher
Red-tailed Hawk
American Bittern
Wood Duck
Rough-legged Hawk
American Black Duck
Sharp-shinned Hawk
Sandhill Crane
Canvasback
Broad-winged Hawk
Dunlin
Northern Shoveler
Ring-necked Duck
Bonaparte's Gull
Long-tailed Duck
Herring Gull
American Wigeon
Pied-billed Grebe
Green-winged Teal
Lesser Yellowlegs
Red-breasted Merganser
Ruddy Duck
Double-crested Cormorant
American Kestrel
Ruddy Turnstone
Black-crowned Night-Heron
Great Blue Heron
Killdeer
Pectoral Sandpiper
Canada Goose
Sora
Semipalmated Sandpiper
Greater Yellowlegs
Black Scoter
Semipalmated Plover
American Coot
Pileated Woodpecker
Northern Harrier
Least Sandpiper
Spotted Sandpiper
Glaucous Gull
Ring-billed Gull
Bald Eagle
Red-shouldered Hawk
Northern Pintail
Common Merganser
Forster's Tern
Turkey Vulture


MAMMALS of MINNESOTA
Moose
Red Fox
Jumping Mouse
Bat
Spotted Skunk
Flying Squirrel
Marten
Lynx
Mouse
Thirteen-lined Ground Squirrel
Fisher
Short-tailed Weasel
Bobcat
Coyote
Porcupine
Jackrabbit
Black Bear
Raccoon
Beg Leaming
Gray Squirrel
Mink
Pocket Gopher
Muskrat
Snowshoe Hare
Franklin's Ground Squirrel
Least Weasel
Cottontail
Mole
Gray Fox
Beaver
Long-tailed Weasel
River Otter
Opossum
Chipmunk
Elk
Shrew
Star-nosed Mole
Striped Skunk
Fox Squirrel
White-tailed Deer
Vole
Red Squirrel
Wolf
Badger
Woodchuck

Improve Water Clarity and Quality

Nutrient cycling –vital part chemical cycling in a lake and influence oxygen supply. Bulrush can also soak up/break down pollutants from contaminated water.

Release oxygen -- Oxygen is a byproduct of photosynthesis

Absorb excess nutrients -- Plants absorb nutrients and reduce algae. Algae, which thrive on nutrients, can become a nuisance when aquatic plants are destroyed.

Erosion control – Submersed and emergent plants protect shorelines from erosive wave action or currents. They also help keep sediment on the lake bottom, which increases water clarity.

Resist invasion – A diverse healthy native plant community is better able to repel invasion by opportunistic exotic weeds.

Beauty

Aesthetics and economics -- A healthy shoreline with a robust aquatic plant community is not only beautiful but also has economic advantages. A clear lake with a strong fishery and abundant wildlife is an obvious benefit for lakeshore property owners or anyone enjoying the lake.

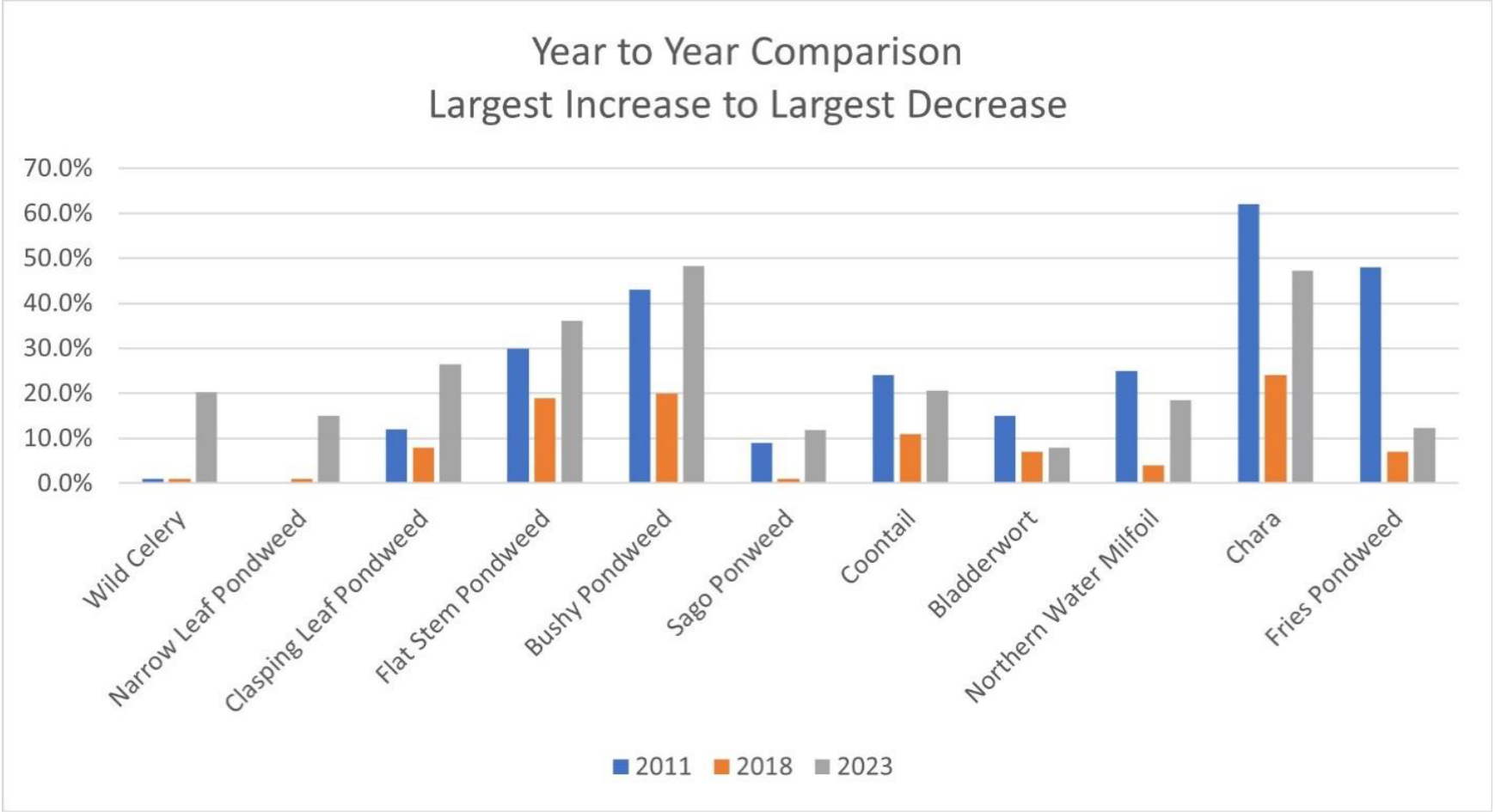
Provide economic value

- As a natural component of lakes, aquatic plants support the economic value of all lake activities. Minnesota has a huge tourism industry centered on lakes and the recreation they support. Residents and tourists spend more than $1.5 billion each year to hunt, fish, camp, and watch wildlife on and around the state's lakes. The wild rice harvesting industry alone is worth at least $2 million to Minnesota's economy.

More Plants?

- **Nutrients?**
  - Like their land-based cousins, aquatic plants need sunlight, water, carbon dioxide, and nutrients-including phosphorous, nitrogen, and potassium to grow. The watershed is the primary source of nutrients.
- **Weather?**
  - During periods of heavy rainfall, increased runoff brings more nutrients into a lake.
- **Human Activities?**
- **Multi Factored**
- **Implement Watershed Best Management Practices**

Cycles and variability: dependent on external and internal factors



Aquatic Plant Management

- Any of the following activities require a permit:
- Destruction of any emergent vegetation such as cattails, bulrushes and wild rice.
- Cutting or pulling by hand or mechanical means submerged vegetation in an area larger than 2,500 square feet or greater than 50 feet along shore.
- Applying chemical pesticides such as herbicides and copper sulfate.
- Moving or removing a bog of any size.
- Transplanting aquatic plants into public waters.
- Use of automated aquatic plant control devices such as the Crary WeedRoller.
- Physical removal of floating-leaf vegetation from an area larger than a channel 15-feet wide extending to open water.
- Hiring someone to mechanically remove aquatic plants or doing it yourself. Contact the APM program coordinator.

Activities NOT allowed:

- Excavating the lake bottom for aquatic plant control
- Use of hydraulic jets
- Destroying or preventing the growth of aquatic plants by using lake bottom barriers.
- Removing aquatic vegetation within posted fish-spawning areas.
- Removing aquatic plants from an undeveloped shoreline.
- Removing aquatic plants where they do not interfere with swimming, boating, or other recreation.

When a permit is NOT needed

- If you are a lakeshore property owner who wants to create or maintain a swimming or boat-docking area, you may cut or pull submerged vegetation, such as Elodea, without a DNR permit under certain conditions:
- First, the area to be cleared must be no larger than 2,500 square feet.
- Second, the cleared area must not extend more than 50 feet along the shoreline or one-half the length of your shoreline, whichever is less.

DEPARTMENT OF NATURAL RESOURCES

Thank You!

Nicole Kovar

nicole.kovar*@state.mn.us*

218-537-6100 *text ok