



# Aquatic Invasive Species (AIS) Education and Awareness Course



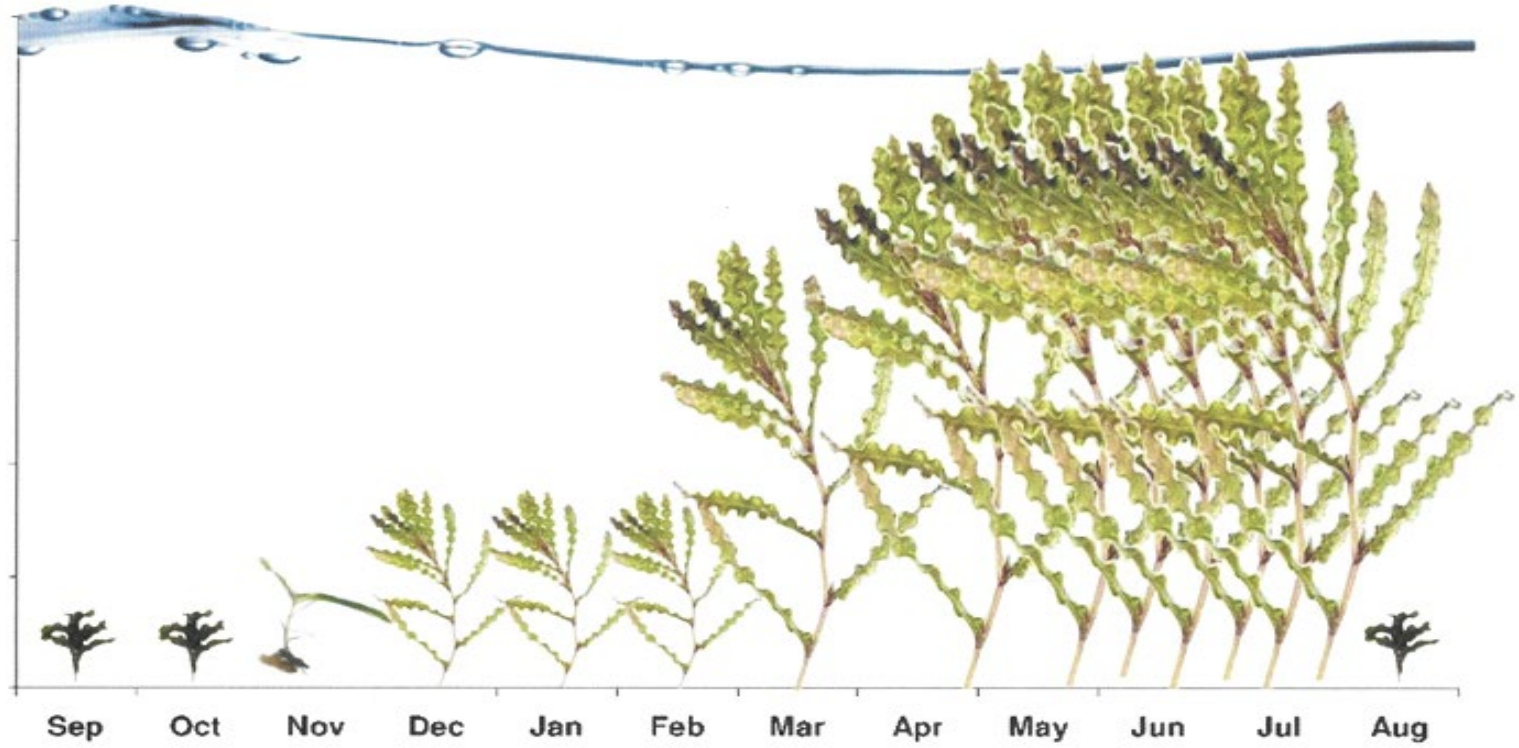
# Course Material

- Aquatic Invasive Species Overview
  - Curly Leaf Pondweed
  - Eurasian Milfoil
  - Zebra/Quagga Mussels
  - Rusty Crayfish
- How Do they Spread?
- Monitoring
- Mitigation and Control Practices
- Prevention – What You Can Do!
- LSA WaterCraft Cleaning Requirements
- Summary

# Curly leaf Pondweed

- An invasive aquatic plant species that can overrun a lake and kill off native aquatic vegetation by becoming the dominant plant.
- First observed in Midwestern Lakes around 1910.
- Unique life cycle gives it a competitive advantage over many other aquatic plants as it remains alive, slowly growing even under thick ice and snow cover.
- First plant to appear after ice-out.
- High densities interfere with recreational use of the lake, clog motors and can result in stunted panfish populations by reducing opportunities for grazing predators.
- Mid summer die-offs result in rafts of dying and dead vegetation along shorelines.
- Decaying vegetation increases phosphorus concentration in the lake which leads to increased algae growth.
- Water clarity prompting high light concentration facilitates rapid growth.
- Currently present in Lake Summerset.
- [Curly Leaf Video](#)









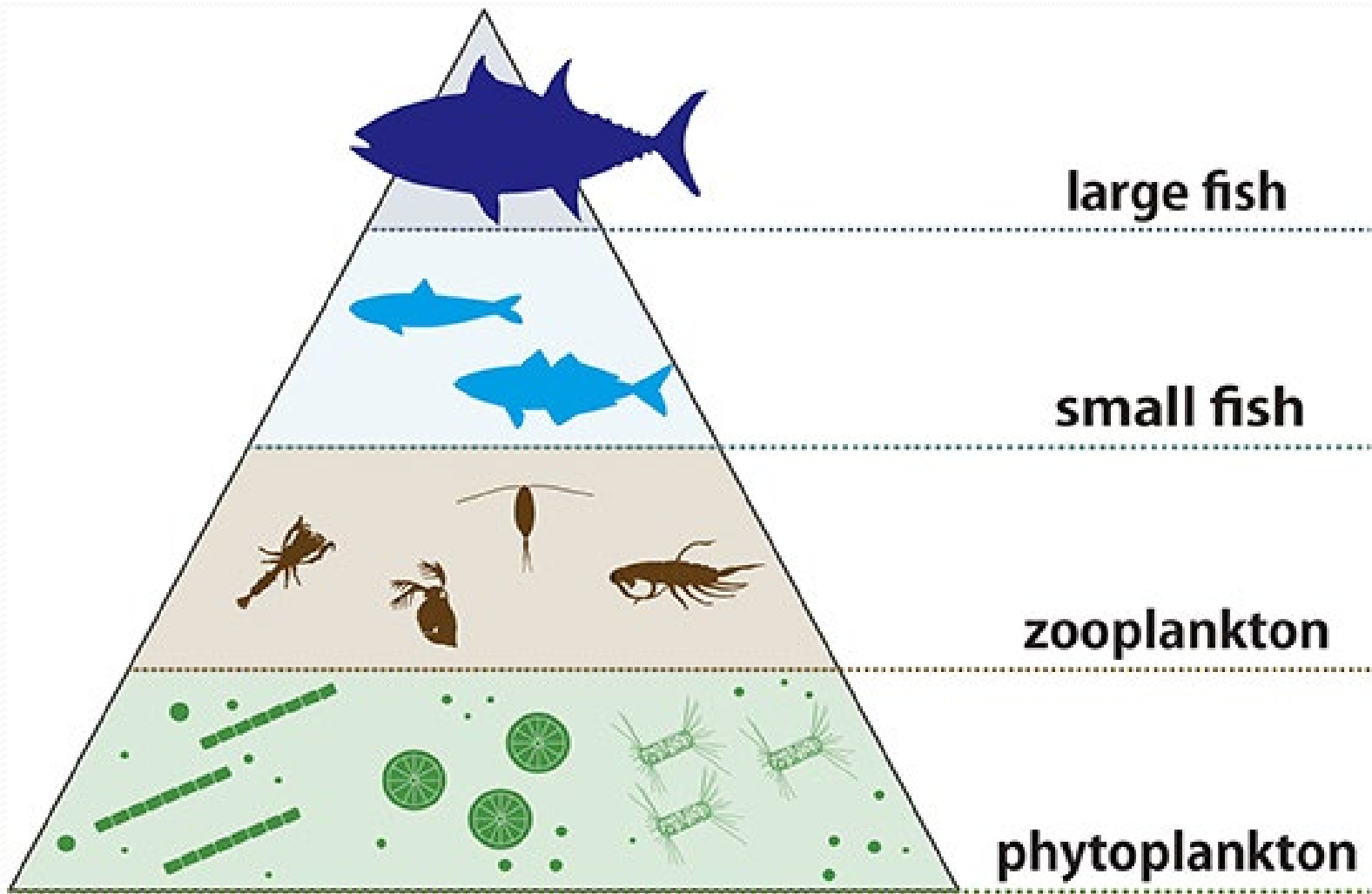
# Eurasian Water Milfoil

- Feathery, submerged aquatic plant that can quickly form thick, dense mats in shallow areas of lakes.
- Begins its spring growth earlier than other native aquatic species.
- Discovered in North America in the 1940s.
- Poor food source for waterfowl and supports lower abundance of invertebrates (food source for fish).
- Impedes recreational opportunities such as fishing, boating, swimming and can reduce waterfront property values.
- Heavy infestations can displace native aquatic plants.
- Does not currently exist in Lake Summerset.
- Silent Invaders video - <https://www.youtube.com/watch?v=PjGUsveJHL8>



# Zebra/Quagga Mussels

- Zebra and Quagga mussels are two of the most devastating invasive species to invade a lake. When they become established they alter the food chain and change the water chemistry, harming native fish, plants and other aquatic life.
- Introduction into the Great lakes appears to have occurred in 1985/1986 when one or more transoceanic ships discharged ballast water into Lake St. Claire.
- A single female zebra mussel can produce anywhere from 30K to 1M eggs per year.
- Fertilized eggs develop into larvae that float and swim in the water column.
- Juvenile and adult mussels attach themselves to docks, boat lifts, boat hulls/engines and trailers.
- They colonize on hard surfaces and substrates in high densities, with as many as ten thousand living in a square yard.
- Through their filter characteristic, they reduce the amount of phytoplankton, zooplankton and algae in the water effectively starving the spawn of native fish populations.
- A single mussel is capable of filtering over a liter of water per day resulting in increased water clarity promoting the growth of excessive aquatic weeds.
- Adult mussels can stay alive for several days out of water.
- Are not present in Lake Summerset yet!
- Silent Invaders video - <https://www.youtube.com/watch?v=WXEgoFg-N1w>





Zebra Mussel

Lateral View

Highly variable  
dark and light  
stripes; or solid  
brown or yellow



Up to nearly  
2" long but  
most are  
less than 1"



Quagga Mussel

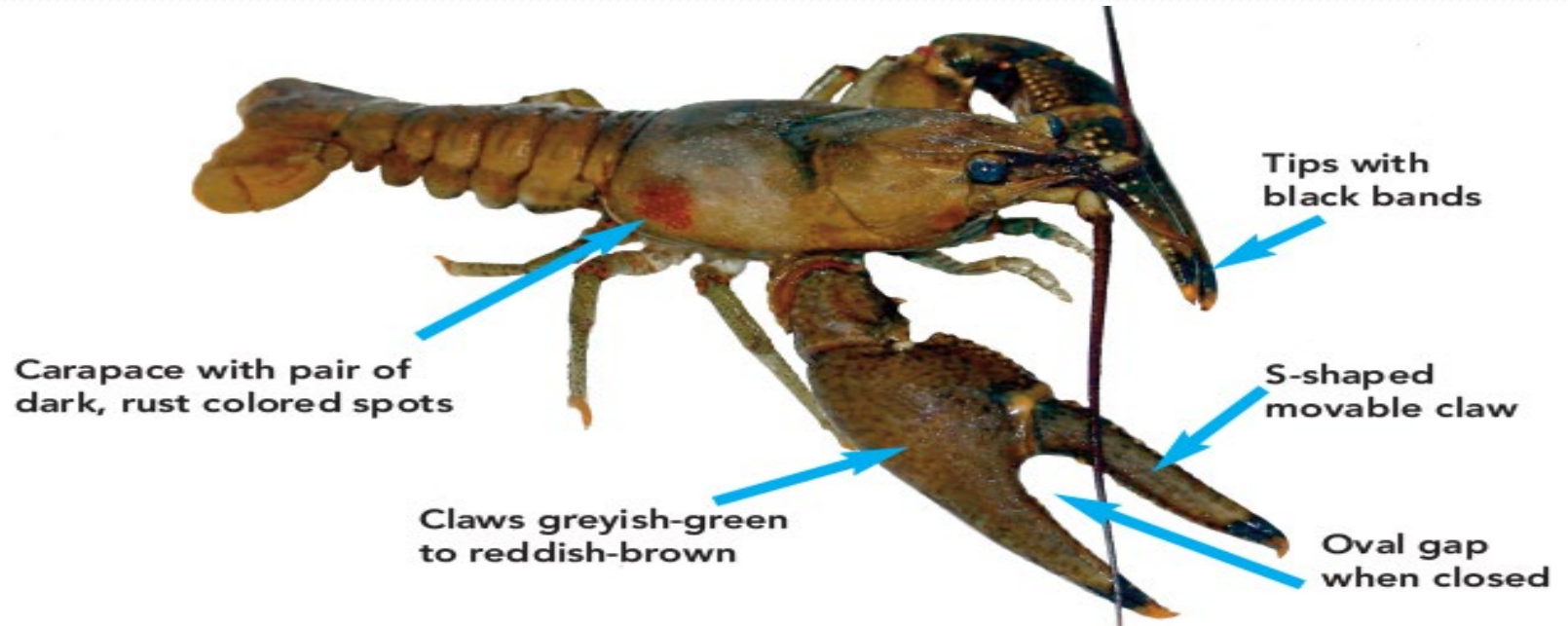
Lateral View

Photos: John Karl



# Rusty Crayfish

- Larger and more aggressive than most native crayfish. Can reach up to 6 inches in length.
- Outcompete native species for food and habitat. Consume large amounts of aquatic invertebrates, small fish, fish eggs and native crayfish.
- Increase the spread of invasive aquatic plants by cutting the stems which take root elsewhere.
- Native to the Ohio River Basin and were more than likely transported to the Midwest by fishermen using them as bait.
- Females produce several hundred eggs per season.
- Body (carapace) is tan to light brown with a dark “rusty” brown spot on each side.
- Claws are large and typically have brightly colored tips above dark bands.
- Currently present in Lake Summerset.



## How Do They Spread?

- Primarily spread by human activities, often unintentional.
- Invasive Aquatic Plants – Become tangled on boat engines, propellers, trailers and other equipment and then transported to other bodies of water.
- Invasive Aquatic Animals – become inadvertent hitchhikers on or in boats, motors, ballast and/or bilge water, live wells, or can cling to vegetation/debris stuck on boats, trailers and gear.

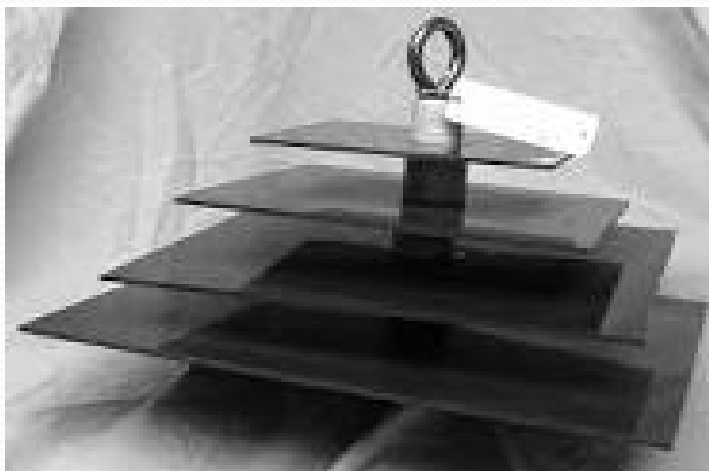




# Monitoring

- Monitoring is an important part of controlling invasive species and can identify new populations while they are still small.
- Drones for aerial pictures to determine locations and spread of invasive aquatic plant concentrations.
- Sonar technology to determine locations and density of plants.
- Zebra mussel sampler plate device.
- Rusty crayfish traps.





# Mitigation and Control Practices

- Once established, eradication of any aquatic invasive species (plant or animal) is next to impossible.
- Containment to slow the spread, manage established populations, evaluating impacts on recreational and sporting activities.
- Chemical Control Methods (Aquatic Herbicides).
- Mechanical Control Methods (Weed Harvesting).
- Biological Control Methods (Predators).

# Prevention – What Can you Do?

- The only way to stop an invasive species from causing harm is to prevent them from entering the lake in the first place.
- Watercraft are the primary pathway for introduction of an invasive species into our lake.
- All motorized and non-motorized water vessels must be cleaned and owner inspected before being launched in Lake Summerset when used in other bodies of water besides Lake Summerset.
- A high pressure boat washing station is available to the membership, located on the east side of the LSA Main Office Parking lot.
- Silent Invaders video - <https://www.youtube.com/watch?v=HljCBET4kKk>

# Prevention – What Can you Do?

- Water Vessel Cleaning Procedures:
  - 1) Inspect and clean off any visible aquatic plants, animals and mud from your boat, motor, trailer and any other equipment used in a foreign water body.
  - 2) Drain motor (vertical position), bilge, live well transom well and any other water containing devices. Flushing motor is preferred.
  - 3) Using high pressure washer, rinse entire boat, motor, trailer, live well and transom well.
  - 4) Always transport water vessels with the bilge plug removed. Remember to re-install it once at the boat ramp.
  - 5) Dry everything with a towel before reuse in the lake.
  - 6) Guest water vessels (motorized and non-motorized) are prohibited for use on Lake Summerset.



## ZEBRA MUSSELS HIDE HERE.

**CLEAN, DRAIN AND DRY YOUR BOAT.**



1 inch

**CLEAN** your boat, trailer and gear by removing all plants, animals and foreign objects.

**DRAIN** all water from the boat, including the motor, bilge, livewells and bait buckets.

**DRY** the boat and trailer for a week or more. If unable to let it dry for a week, wash it with a high-pressure washer and hot (140-degree), soapy water.

## Before Launching and Leaving Inspect Everything!



**Compartments**

**Paddle**

# Lake Summerset WaterCraft Cleaning Guidelines

- Watercraft used on waterways other than Lake Summerset need to be cleaned at either the LSA Boat Washing Station located behind the main office building, or at an offsite location before being used on Lake Summerset.
- Failure to clean your watercraft may result in the infestation of an Aquatic Invasive Species into Lake Summerset.
- Your support in helping stop the spread of Aquatic Invasive Species is appreciated.

# Summary

- All Association Members are stakeholders in limiting/preventing invasive species infestations into Lake Summerset.
- Once infested, eradication is next to impossible. Only option becomes Control and Management.
- Control and Management Costs (dues affecting) increase exponentially based on the level of infestations.
- Infestation of specific types of invasive species (animal verses plant) affects the lakes ecosystems differently. Fishing and boating are the primary recreational activities that are affected.
- Environmental and economic costs will affect all members of the association, possibly to the level of impacting property values.
- Prevention is the key to limiting impacts on all members of the association.