I. Registration and Archived Issues
North Carolina Extension Personnel should email rob_richardson@ncsu.edu to be added to his email list. Everyone else should go to http://www.weedscience.ncsu.edu/aquaticweeds/ for quick registration.

Previous issues of this newsletter may be found at http://www.weedscience.ncsu.edu/aquaticweeds/.

II. Yellow Floating Heart Becoming Invasive in NC
Rob Richardson, NCSU
Yellow floating heart, Nymphoides peltata, is becoming more prevalent (and more troublesome) in North Carolina. This plant has entered the water garden trade and is being released into ponds in the same way that parrotfeather and water hyacinth have been released previously. To date, 3 ponds in North Carolina have been infested and subsequently controlled after considerable effort. Glyphosate and Habitat may be used for yellow floating heart control, while 2,4-D, triclopyr, and other products have been ineffective. It may take up to 3 applications to eradicate this plant with glyphosate or Habitat. Repeated manual removal may also be effective on smaller sites, but fragmentation may spread the weed within larger bodies of water.

Individuals with water gardens and nurseries supplying these plants should be encouraged to properly dispose of unwanted plant material and never release these plants into the environment. These plants should also never change hands without the same warning given to the new owners. As water gardens continue to increase in popularity, public education is essential to prevent further invasions.

III. Biology and Identification of Yellow Floating Heart
Amanda West, NCSU
Yellow floating heart, also known as yellow water fringe, is native to Europe and Asia and is becoming a popular water garden plant in the U.S. Once established in ponds or shallow lakes, yellow floating heart forms a dense mat over the surface of the water displacing native plants and out competing them for nutrients and sunlight. Infestations may occur in water up to 4 meters deep and are so dense as to also impede fishing, swimming, and boating. Yellow floating heart is a perennial with 3 to 10 cm wide heart-shaped, green leaves that float on the water surface. Leaf margins are scalloped and undersides have a light purple tinge. Flowers have five yellow fringed petals rising above the water surface on stalks. Each stalk may produce up to 5 flowers. A 2.5 cm fruit bears many oval-shaped hairy seeds. Yellow floating heart reproduces by branched stolons just under the water surface, seeds, and fragmentation. It may be confused with spatterdock, which has distinctive ball-shaped flowers and elephant ear-shaped leaves, or watershield, a plant with slimy leaf bottoms.
IV. Grass Carp Regulations

Triploid (sterile) grass carp may be stocked for aquatic weed control in most areas. Grass carp are an effective biological control agent for many types of aquatic weeds and normally provide effective control for 5 to 8 years. Stocking of large fish (8 to 10 inches) is recommended to reduce losses from predation by largemouth bass and fish eating birds. Stocking rules differ by state. General rules concerning legalities of stocking are listed below.

Maryland. The stocking of grass carp of any type is prohibited in Maryland. There is concern of escapement from ponds to the Chesapeake Bay. The ability of grass carp to consume large amounts of aquatic vegetation would be detrimental to efforts aimed at restoring grass beds throughout Maryland’s portion of the Chesapeake Bay. More information can be found at www.dnr.state.md.us.

North Carolina. In private impounded waters, triploid grass carp may be stocked at up to 150 fish in ponds less than 10 acres without a permit. Stocking of over 150 fish per year in private waters or stocking any number of fish in private waters that are 10 acres or larger in size requires a permit from the North Carolina Wildlife Resources Commission. In all public waters, a permit is required for stocking any number of fish. More information can be found at www.ncwildlife.org.

South Carolina. Only triploid grass carp can be legally sold in South Carolina by vendors approved by the South Carolina Department of Natural Resources. Any number of fish may be purchased from a licensed, approved vendor for stocking of private waters only. More information can be found at www.dnr.sc.gov.

Virginia. A permit is required from the Virginia Department of Game and Inland Fisheries to stock triploid grass carp into any Virginia water body. More information can be found at www.dgif.virginia.gov or http://www.cnr.vt.edu/extension/fiw/fisheries/pondslakes/grasscarp.html.

West Virginia. Requires consultation with the Division of Natural Resources fisheries biologist responsible for the county where the pond is located. If a decision is made to stock triploid grass carp, they must be obtained from a vendor approved by the West Virginia Division of Natural Resources. Next, an application to import triploid grass carp must be filled out and then an importation permit will be issued to the approved vendor. More information can be found at www.wvdnr.gov or http://www.wvu.edu/~agexten/aquaculture/howto.htm.

For more information on stocking grass carp, the following extension resources are available: Triploid Grass Carp as a Biological Control of Aquatic Vegetation (WVU).
Using Grass Carp in Aquaculture and Private Impoundments (USDA)
Using Grass Carp for Aquatic Weed Control in North Carolina (NCSU)

V. Upcoming Events
- Management of Golf Course Ponds: Carolinas Golf Course Superintendents Association at Myrtle Beach, SC, Nov. 14, 2006
- Northeast Aquatic Plant Management Society: Jan. 15-17, West Dover, VT
- Aquatic Plant Management Society: July 2007, Nashville, TN
- South Carolina Aquatic Plant Management Society: Aug. 2007, Myrtle Beach, SC

VI. Author Information
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