Connecticut Agricultural Experiment Station

Invasive Aquatic Plant Program Summary

- **Surveillance and Mapping of Aquatic Vegetation**
  - 185 lakes and ponds surveyed and mapped since 2004
  - Interactive maps available online at www.ct.gov/caes/iapp
  - 61% of the water bodies contained one or more invasive species
  - 14 invasive aquatic plant species found (number of water bodies)
    - Eurasian milfoil (44), Curly leaf pondweed (36), Minor naiad (36), Variable milfoil (32), Fanwort (22), Parrot feather (4), European water clover (3), water hyacinth (2), water chestnut (3), hydrilla (2), Water lotus (1), Water starwort (1), Brazilian waterweed (1), Yellow floating heart (1).
  - Over 100 native species found
  - Cataloged and mounted all species from each lake in CAES herbarium
  - 18 water bodies resurveyed to assess changes
  - Candlewood Lake (the State's largest lake) surveyed annually and lakes Lillinonah and Zoar surveyed in alternate years
- **Survey aquarium plant retailers and educate on laws banning the sale of invasive species**
  - 28 retailers surveyed in 2008, 47 in 2010
  - 29% of the stores were selling one or more banned species
    - Approx. 20% of the stores sold fanwort and 12% sold Brazilian waterweed. Variable milfoil and parrot feather were also sold
  - All retailers were revisited and given information on State laws and an aquatic plant identification guide. They also expressed interest in attending an educational workshop at CAES
  - DOAg, DEEP and Invasive Plant Council informed
- **Investigate Novel Control Strategies**
  - Biological
    - Introduced milfoil weevils into Candlewood Lake in 2008 and 2010
    - Introduced grass carp into Grannis Lake, East Haven in 2007
  - Environmental
    - Assess effectiveness of winter drawdown in Candlewood Lake through annual surveys
  - Herbicides

        - Proved variable milfoil in Bashan Lake, East Haddam can be controlled with fall spot treatments of 2,4-D. No contamination of nearby wells.
        - Proved curly leaf pondweed and Eurasian milfoil could be controlled with April application of diquat dibromide and native plants could be protected with limnobarriers
    - Mechanical
        - Showed nuisance plants in beach area could be controlled with pre-swim season cutting
- **Ecological Research**
    - Since 2005, 5 ecological research projects have been published in high ranking journals. Currently, 2 are in review and 1 is in preparation (see www.ct.gov/caes/iapp).
        - Past projects have elucidated the roles of human influences, native plant diversity, and lake water chemistry in the process of aquatic plant invasion throughout the state.
    - Current Projects include:
        - Using survey data, water chemistry risk assessment ranges were developed for Connecticut's five most common non-native aquatic plant species; our predictive model showed 90% efficacy.
            - Found that *Myriophyllum spicatum*, *Najas minor*, and *Potamogeton crispus* prefer waters with high conductivity and buffering capacity.
            - Found that *Cabomba caroliniana* and *M. heterophyllum* prefer waters with low conductivity and buffering capacity.
            - During the winter of 2011, this project will be expanded to include all species in an effort to determine the overall effect of water chemistry in the abiotic control of plant community composition.
        - In 2011, IAPP examined the environmental factors contributing to plant community structure, and native/invasive plant diversity in Connecticut lake systems. We investigated the influence of depth, light, and soil chemistry in the structuring of plant communities to better understand the principals of non-native plant invasion and to enhance strategic plant management.
- **Aquatic Plant Genetics**
    - Sequence native and invasive plants and update GenBank.
    - Evaluate genetic differences in populations of variable milfoil and fanwort
    - Determine exact species of plants sold by aquarium retailers.
- **Maintain and Update CAES IAPP website** www.ct.gov/caes/iapp
    - All lake maps, data etc. promptly uploaded to webpage for use by citizens and government agencies

- Digital aquatic plant herbarium maintained
- Lake survey request form can be submitted from web page
- Invasive aquatic plant advisories issued
- Publications and many talks available

The Connecticut Agricultural Experiment Station

123 HUNTINGTON STREET, P.O. BOX 1106, NEW HAVEN, CONNECTICUT 06504

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June 9, 2011

Dear Sir/Madam:

Scientists at The Connecticut Agricultural Experiment Station have completed a study on the DNA analyses of some important invasive aquatic plant species. The plant specimens were purchased in dozens of businesses, which sell these and other aquarium products. Although it is sometimes difficult to identify aquatic weed species based on visual examination alone, our results revealed that banned plants were sold in about 30% of the establishments surveyed. For example, *Cabomba* (fanwort) species seems to be a particular problem.

I have instructed our staff members to re-visit all businesses included in the study and that pertinent information on test results, current state laws, and literature on banned plants be provided in an educational program. We realize that people may be unaware of state laws on invasive plants and do not know which plant species are banned. However, many of these species can be very destructive to our lakes and ponds, and we need to make an effort to correct problems.

Our staff members are available to assist you in answering questions. We are planning to conduct a workshop on invasive aquatic plants this fall. If you would like to attend this event, please convey this to our staff when they visit you. Thank you.

Sincerely,

Louis A. Magnarelli

Louis A. Magnarelli, Ph.D.
Director

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Phone: (203) 974-8500 Fax: (203) 974-8502
Toll Free: 1-(877) 855-2237
WWW.CT.GOV/CAES