Combining state & private efforts to control a new, and very aggressive, aquatic invasive plant...

*Oenanthe javanica*

NCWSS Annual Meeting—Invasive Plant Symposium  
December 15, 2011
Parsley family—Apiaceae
Water dropwort, water celery, Chinese celery, Japanese parsley, Java dropwort
Native to Asia & Australia...

- **Habitat** – freshwater marshes, swampy fields, ditches, canals, streams; sea level – 3400 m, frost hearty roots & stolons

- **Habit** – aquatic perennial herb, creeping stolons, long thread-like rootlets, stems 4” – 5’ high, fragrant compound umbels w/ white flowers, forms dense mats

- **Culinary uses** – cultivated in Asia, Hawaii, tops eaten raw, salads, garnish; leaves, stems steamed w/ rice

- **Medicinal & other uses** – rich source vitamins & minerals, water purification; ground cover; animal feed
Suckering, decumbent stem in nursery study pool
Dense mat of decumbent suckering stems...
Dense fine rootlets...
Oenanthe in North America...

- **Native Oenanthe in western states** — water parsley
  - *O. sarmentosa* C. Presl ex DC. – AK, CAN (BC), WA, OR, CA

- **Introduced in the eastern & midwestern states** —
  - *Oenanthe aquatica* (L.) Pior. – D.C., MD, OH
  - *O. javanica* (Blume) DC. – MO
  - *O. javanica ssp stolonifera* (Wall. Ex DC.) Murta
  - *O. javanica* ‘Flamingo’ – variegated variety; hearty to Zone 7-10, to 5°F
  - *O. pimpinelloides* L. – CA

- **Invasive Alerts** — Fairfax County VA in stormwater mgt pond & canal linked to sensitive wetlands

- **Cultivation, water gardens** — grown in FL on trial basis; permit required to control spread into wetlands; survived freezing temps, no pests
Distribution of Oenanthe sp.
Similar species in appearance or habitat...

- **Water cress** – *Nasturtium officinale*
  Europe; biennial, short-lived perennial, calcareous springy places

- **Wild chervil** – *Anthriscus sylvestris*
  Europe; biennial, short-lived perennial; rich moist soil in disturbed uplands

- **Low water parsnip** – *Berula erecta*
  Native in calcareous marshes & springy places
From Charleston to Brodhead
M.P. KING - State Journal
Ron Risum, shown holding a piece of water celery, an invasive species, found the plant in a creek in Brodhead.
Pretreatment from Bridge
Nursery Study
Native seedlings

- Acnida altissima
- Bidens connata
- Cyperus sp
- Leersia oryzoides
- Lindernia dubia
- Ludwigia palustris
- Penthorum sedoides
Confirming Taxonomy

Oenanthe sp.

Developing fruit (drawing)
- 5-merous (fls, sepals)
- epigynous; sepals connate, persist
- ovary inferior, 2-celled
- single ovule/cell
- styles 2; fr. beakless
- fr. hypanth globose
- inf. flat, terete; wingless
- ribs low, broad
- infl.: umbrelliform, syn.-tax.
- pet. white
- ped. unequal; spreading
- umbels comp., term., lax
- bracts none
- plant: glb., branched, perenn.;
  pneumat. to decomposed;
  fls. toothed,acea; stipulate
Clues to invasiveness & control...

- Habitat – frost hearty roots & stolons, ground water seeps/springs ice free in winter

- Habit – stems root easily, rapid growth, mat forming (highly competitive), seed germination erratic

- Cultivation - popular water garden plant

- Vectors – humans, floodwaters, animals
Rapid Response Plan
1. **Project participants:** DNR, AES, LSRWA

2. **Project area:** Sugar River floodplain, Brodhead; agricultural ditch

3. **Project problem:** first WI report of unknown sp/risk; ditch direct link to Sugar River

4. **Project goals & objectives:** eradication, site stabilization, long term monitoring, public outreach
5. Method: chemical; permits; permissions, collections for study & id, monitoring

6. Other partners: landowner, pond owner, neighbors, USRWA, USACE, UW Herbarium

7. Photo documentation
Treatment 1 – July 29, 2011

- Temp/rel humidity— 85 °F, 70%
- Wind speed/dir— 2-4 mph, out of east
- Time/conditions— 2:30 – 4:00, clear
- Mixture— 4 gal: 4oz/gal of 53.8% a.i. glyphosate & 1 oz/gal of 28.7% a.i. imazapyr
- Method— broadcast spray w/ backpack sprayer
M.P. KING - State Journal
Aaron Kubichka of Applied Ecological Service sprays an herbicide on large swath of water celery, an invasive species, overtaking a creek in Brodhead.
M.P. KING - State Journal

Water celery, an invasive species, found in a creek in Brodhead.
M.P. KING - State Journal
Aaron Kubichka, with Applied Ecological Services, sprays herbicide on invading water celery plants that have choked a ditch not far from the Sugar River near Brodhead.
These water celery plants near the Sugar River have been treated with herbicide, which was tinted so that the sprayer could keep track of which plants already had been doused.
Results – First Treatment
Resprouting from viable roots & stolons
Minor resprouting
Surviving stems in disturbed sod
Invasion into turf
Kill line—native seedbank
Treatment 2 – Sept 10, 2011

- Temp/ rel humidity — 75 °F, 60%
- Wind speed/dir — 5 mph, out of north
- Time/conditions — 12:15 – 1:15, clear
- Mixture — 3 gal: 4oz/gal of 53.8% a.i. glyphosate & 1 oz/gal of 28.7% a.i. imazapyr
- Method — broadcast spray w/ backpack sprayer
Results – Second Treatment
Next Steps

• Monitor ditch during winter for ice-free conditions

• Monitor spring 2012 & collaboratively assess needs—adaptive management

• Follow-up treatments to water celery & opportunistic exotics (thistles, rcg, etc.)

• Assess native seedbank response; cover crop seeding or native enhancement seeding to stabilize site
Next Steps

• Assess nursery study pool population for overwintering mortality/survivorship

• Monitor Sugar River corridor and tributary streams, w/ focus on seeps & springs

• Partner with USRWA on AIS program for Sugar River

• Reporting, public outreach & education
Questions?