

Successful Control of Eurasian Watermilfoil in Blackhawk L, WI



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Blackhawk Lake, Iowa Co., WI

- **Constructed 1971**
- **Publicly owned shoreline**
- **660 acre recr area with campgrounds, beach, concession, landing**
- **High quality for SW WI especially in spring**
- **Excellent fishery**
- **Wildlife area**



Blackhawk L Physical Characteristics

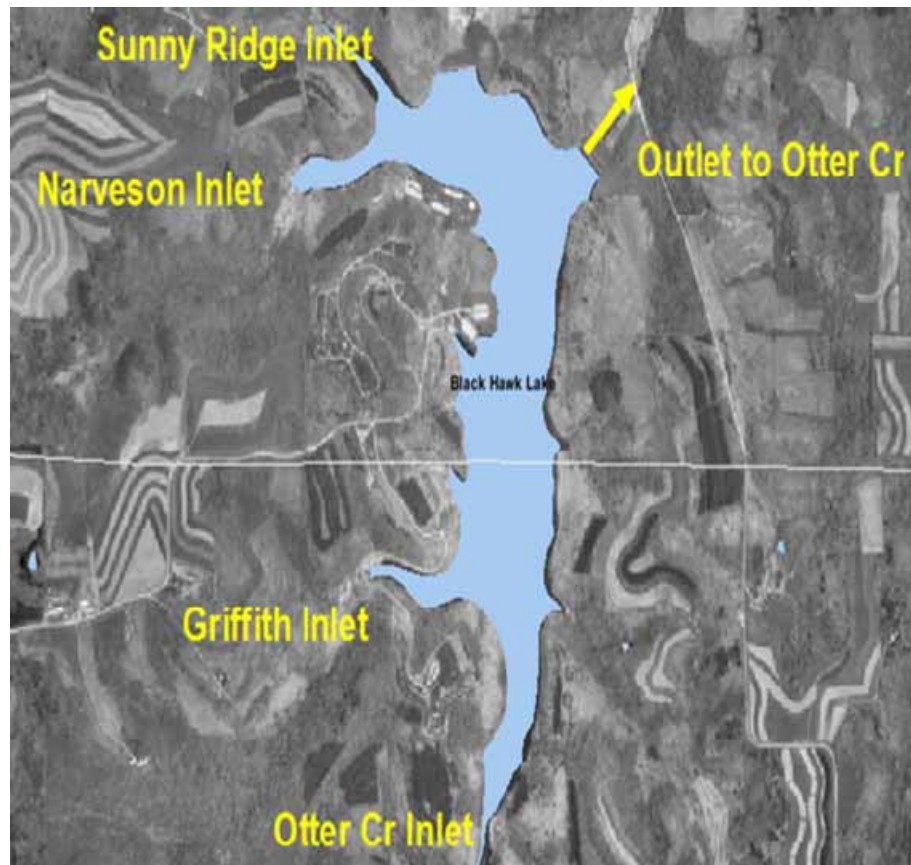


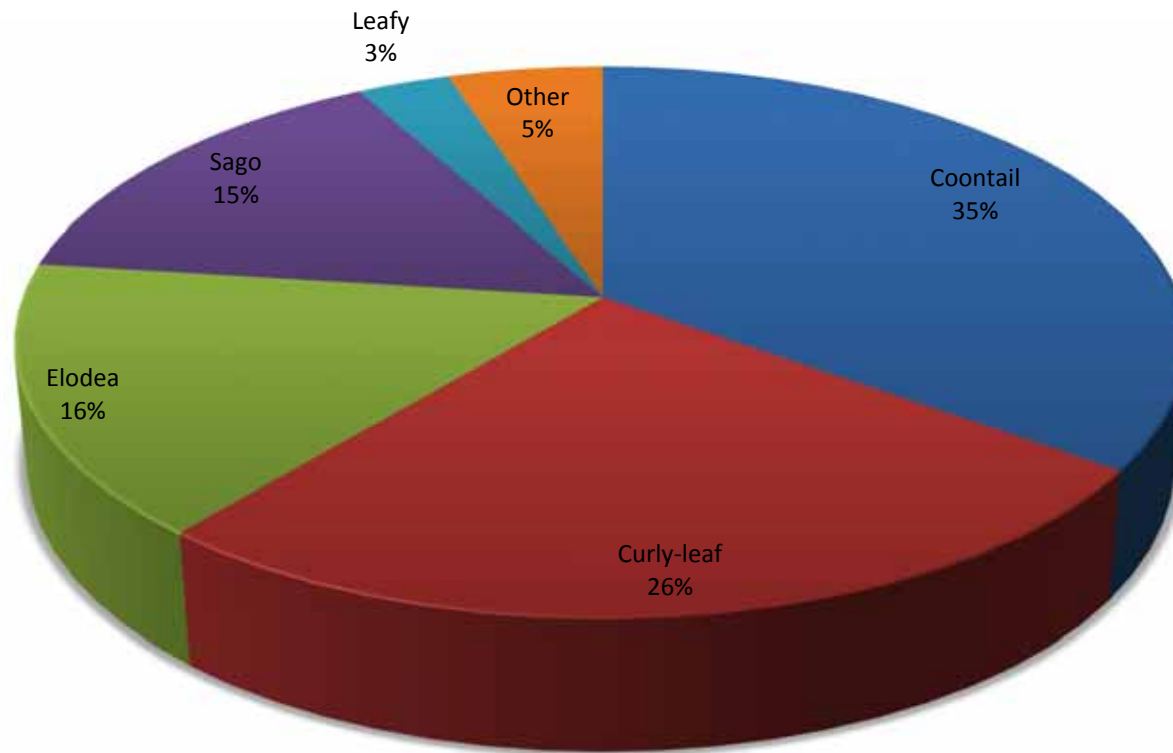
Table 1. Blackhawk L, Iowa Co., WI
Physical Characteristics

Area	220 acres
Maximum Depth	45 feet
Mean Depth	14.8 feet
Volume	3260 acre-feet
Littoral Area	80 acres 36%
Max. Depth Plants	15 feet
Flushing Rate	2.1 times year
Residence Time	0.48 year
Watershed Area	9780 acres
Discharge	60% bottom
	40% surface

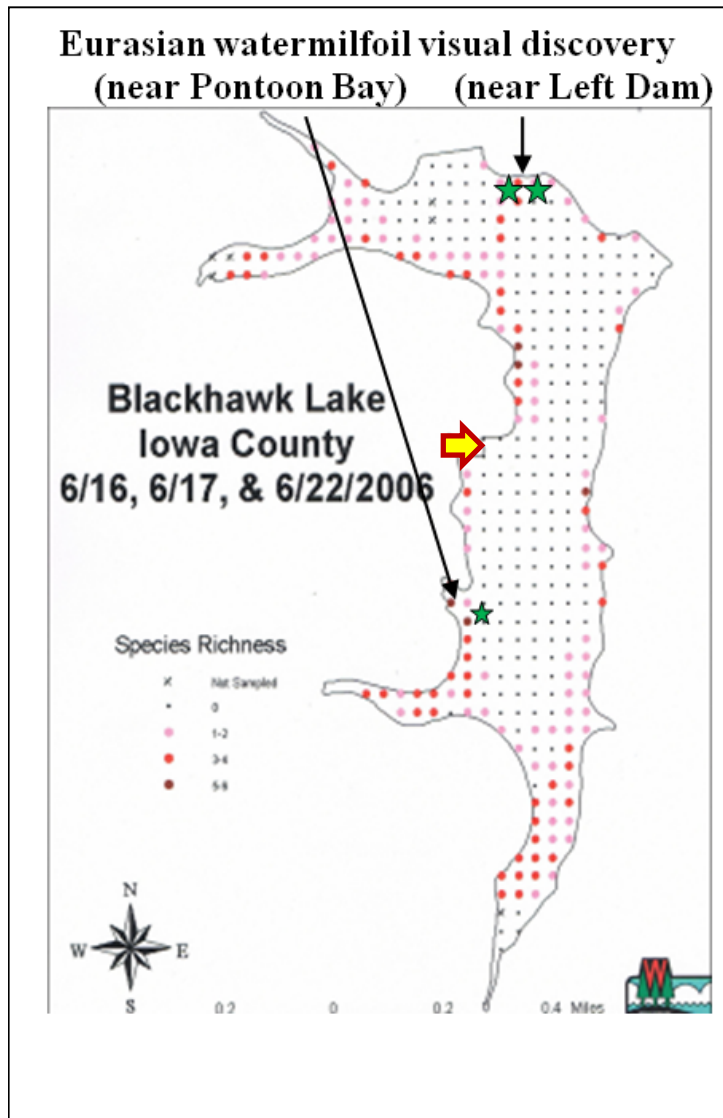
Blackhawk L Spring vs Summer Secchi 2006 - 2016



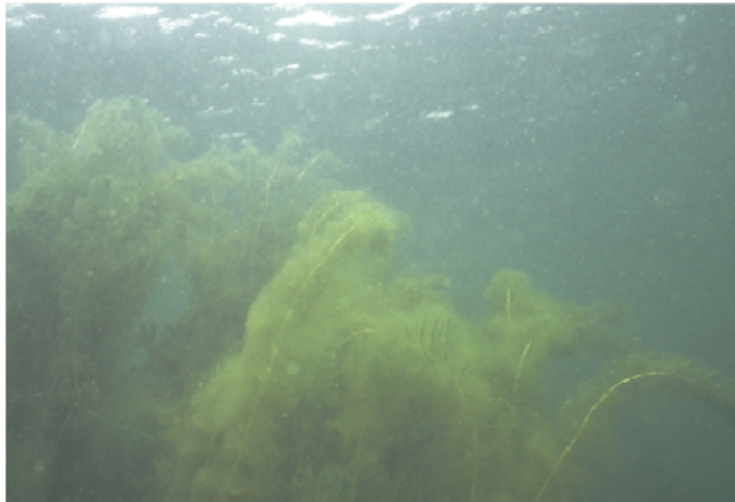
Blackhawk L Aquatic Plant Relative Frequency June 2006



Blackhawk L 2006 APS found EWM



Early Detection/Rapid Response 2006



- **EDRR grant:**
 - Geolocate, map, monitor EWM
 - Survey aquatic plants, monitor WQ
 - Prepare/implement APM Plan
 - Information/education
- **Pioneer colonies on NNE side uprooted or root crowned by scuba diver June 2006**
- **Collected in nets, disposed on land**
- **August 2006: scattered colonies in many areas**

2007 Distribution and Treatment

- Larger colonies
- New colonies along E & W shorelines
- Spot treatment w/ 2,4-D granular
- Manual removal
- Less post-treatment, new locations



Areas treated



EWM post treatment

2008/2009 EWM Distribution & Manual Removal

- 2008
 - Heavy spring rains, water turbid,
 - no EWM, few other plants
- 2009
 - Near pioneer infestations & S of boat concession
 - Manually removed in original infestation locations by snorkeler
 - Difficult where interspersed with other plants



2009 Manual Removal



2010 EWM Distribution & Treatment

- Spring water clarity 20'
- EWM abundant on 5 acres of sand ridge near left dam, 5-10' water
- Colonies in pontoon bay & elsewhere interspersed with other plants



EWM on Sand Ridge, June, 2010



EWM Treatment w/2,4-D, June 2010



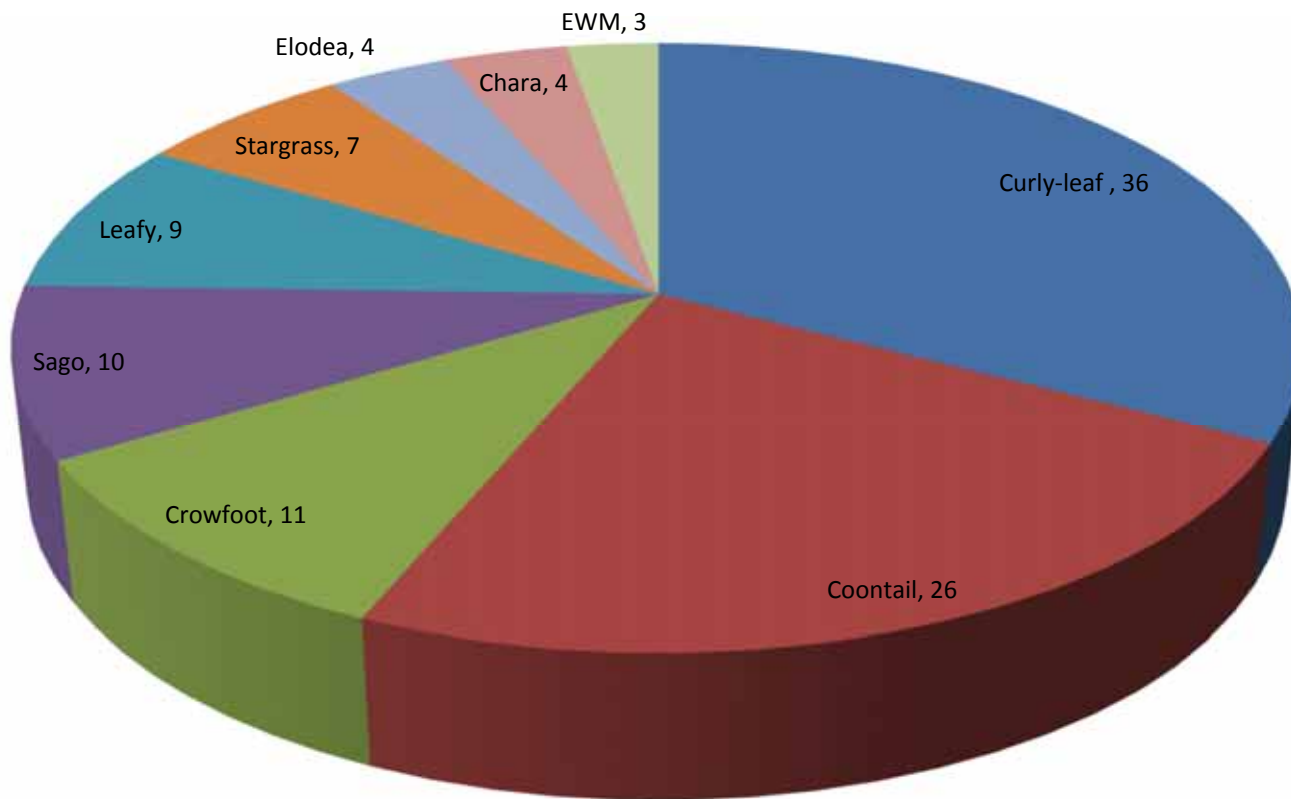
EWM treatment 2010	Application rate lbs/acre 2,4-D		
	6/14/2010	6/16/2010	Total
Treatment area			
Between green & yellow lines (2.25 acres)	55	0	55
Between yellow & red lines (1.25 acres)	55	120	175
Within red line (1.25 acres)	55	140	195
Within blue line (0.25 acre)	55	88	144

Blackhawk L Aquatic Plants 2010 - 2011

- **No EWM remainder of 2010**
- **2011 Pt/Intercept APS**
 - **1 colony EWM**
- **> diversity than 2006**
 - **White water crowfoot**
 - **Water stargrass**
 - **Leafy pondweed**



Blackhawk L Aquatic Plant Relative Frequency June 2011



AIS Education/Prevention/Planning Grant

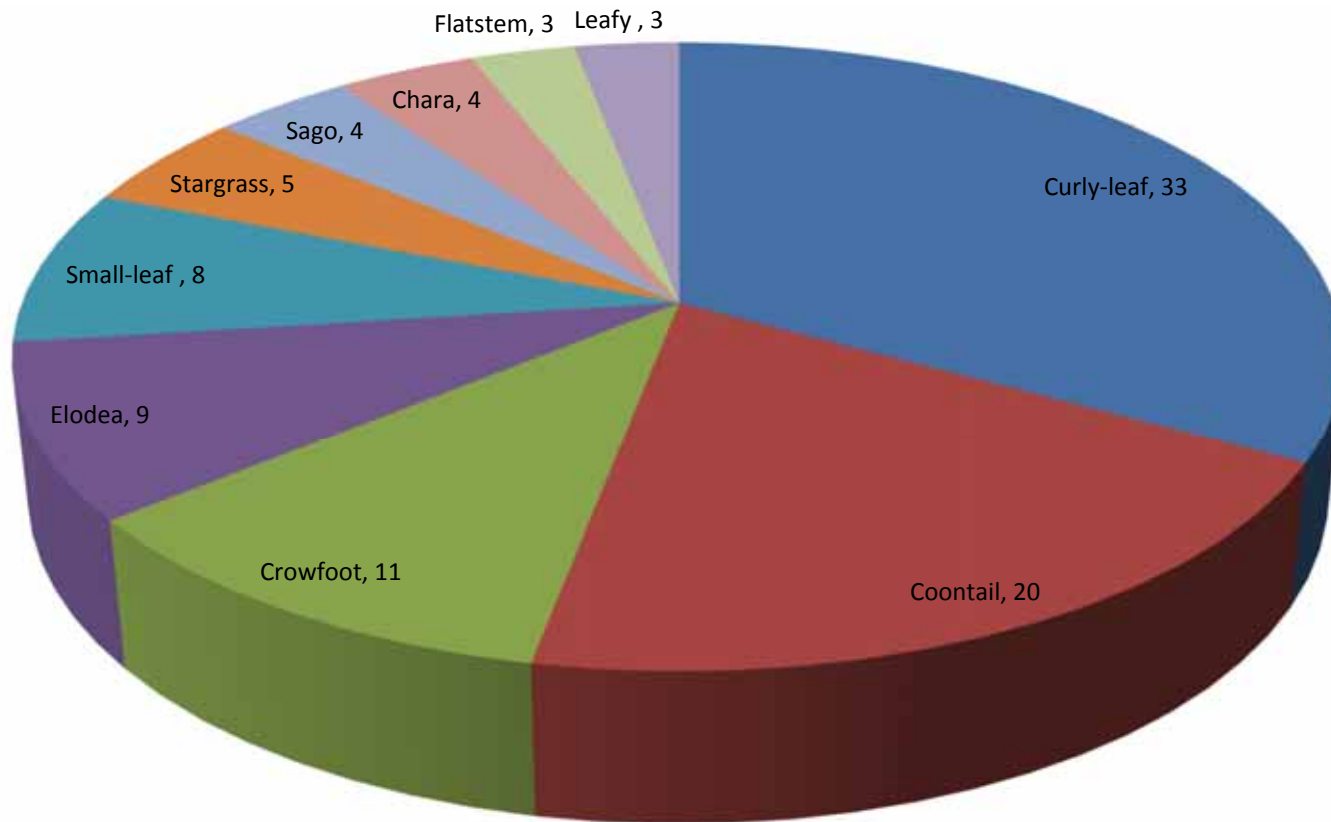
- **Monitoring, geo-locating, mapping EWM**
- **WQ monitoring**
- **Aquatic Plant Surveys**
- **APM plan update**
- **Training staff & volunteers on AIS & WQ monitoring**
- **Clean Boats, Clean Waters**
- **Information/Education**

EWM 2012 - 2016

- **Biweekly boat/
rake surveys**
 - no EWM
- **Pt/intercept APS
2015**
 - more diverse
than 2006 & 2011



Blackhawk L Aquatic Plant Relative Frequency June 2015



Clean Boats, Clean Waters

- Signs
- Info/educational materials at office/nature center
- Electronic message board at landing
- Watercraft inspections & education
 - Staff/volunteers
 - SW Badger RC&D
 - priority for CBCW



WQ & AIS Educational Workshops for Highland Schools



Blackhawk L Aquatic Plant Management

- **Manual harvesting best for EWM during clear water phase & where smaller distinct colonies**
- **Herbicide more effective & practical for larger areas**
- **Since now water stargrass, which is susceptible to 2,4-D, use different herbicide for EWM control**

APM for High Use Areas

- **Spring/early summer:**
 - navigation, fishing, swimming impaired
 - boat concession, fishing pier, beach
- **CLP, coontail, crowfoot, small-leaf, leafy**
- **Treat late May & June as needed**



Why No EWM found since 2011?

- **Monitoring not found, could still be there**
- **Early detection/rapid response**
- **Effective 2,4-D treatment on sand ridge 2010**
- **Manual harvesting helped where feasible**
- **More diverse aquatic plant population - collective competition**
- **Weather**
- **Clean Boats, Clean Waters**
- **Educational activities**
- **Other?**

Questions?

