2010 MNWIISC Invasive Species Conference Synopsis

I attended the MNWISC Invasive Species conference in Nov and these are my take away notes.

The entire program is on the DCLA web site at http://www.dclamn.org if you are interested. I have saved you the hassle of going through the entire report and note that the following links are pertinent to Lobster and are a part of the summary.

The seminar regarding the Common Carp Management program was held on Wednesday Morning Page 121 of the Conference Proceedings and is very interesting but no link available.

Happy Reading!

Bonnie

Curly Leaf Pondweed Control
http:///www.mipn.org/MNWIISC talks/upload folder/Tues_AM_MgmtCLP_Johnson.pdf

Pressure Washing Study
http://www.mipn.org/MNWIISC%20talks/upload%20folder/Monday_PM_InterruptingBoatingPathway_Rothlisberger.pdf

Zebra Mussel
http://www.mipn.org/MNWIISC%20talks/upload%20folder/Tuesday_AM_AquaticInvasiveInvertebrates_McComas.pdf

Common Carp Management: 8:30 am - 10:10 am

Population Estimates of Common Carp Demonstrate that Nursery Habitat May be Limiting

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Recent research has indicated that recruitment of common carp (*Cyprinus carpio)* in Midwestern lakes is driven by recruitment events in shallow basins prone to winterkill (Bajer & Sorensen 2010). However, the abundance of year-0 carp has yet to be determined in any North American lake. We used trap-nets and minnow traps to conduct a mark-recapture study in three lakes in the Phalen Chain of Lakes in St. Paul, MN to determine these values.

Preliminary data suggest that the number of age-0 carp varies greatly and that large lakes, which do not winterkill typically have none. We estimated 12,000 in a 6 ha pond (Markham) that winterkills and 2114 in another (Casey); no young carp were caught in the main lake (Keller), which does not winterkill. Age-0 carp in Casey and Markham had equivalent condition factors, suggesting that food availability does not explain variation in their abundance.

Notably, Lake Keller catches were dominated by bluegill sunfish (*Lepomis macrochirus),* which eat carp eggs, while no bluegill were found in the two nursery lakes. Instead, these nurseries had large numbers of other fishes, with carp dominating (69% of fish caught) in Markham Pond. Ongoing research is refining these measures and examining other techniques eDNA to determine if they might provide easier measures of fish abundance as trap nets are laborious. Once perfected these techniques should permit control of carp using IPM schemes.
(Funded by the Minnesota Environment and Natural Resources Trust Fund).

Hormone Implants Induce Potent Pheromonal Attractant Release from Common Carp (*Cyprinus carpio*)

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The common carp (*Cyprinus carpio*) is one of the most damaging invasive fish species in North American lakes, wetlands and shallow rivers. To date, carp control has focused on rotenone poisoning but it is expensive and kills all fish. Pheromones that mediate behavioral interactions between conspecifics, show promise for use in targeted removal of the carp. Recent lab studies have shown that ovulated female carp release a mixture of F prostaglandins and unknown bodily metabolites which attract males at picomolar concentrations. Because we do not know the identity of the bodily metabolites we have devised a way of continuously inducing high levels of sex pheromone release by implanting carp with F prostaglandin. Laboratory tests show they release extremely high levels of the entire pheromone for up to two weeks. Field tests show that they can attract males from a distance of 50m. Future studies are planned in Australia. We hope that this technique can serve as tool in integrated control strategies to remove small numbers of adults from lakes after netting or treatment with rotenone.
(Funded by the Invasive Animals Cooperative Research Centre, Australia).

Egg Predation by Native Sunfish Control Recruitment of Invasive Common Carp

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The common carp (*Cyprinus carpio*) was introduced to North America a century ago and now dominates many shallow lakes where it wrecks great ecological damage. Control methods currently rely on poisoning and draw-downs, and are damaging and difficult to sustain. Recent studies (Bajer & Sorensen 2010) suggest that carp recruitment (survival of young) is sporadic and may be triggered by winter hypoxia that kills native fishes which otherwise might eat young carp. This study examined the fate of carp eggs in lakes that experienced hypoxia and normoxic lakes that did not. Carp spawning activity was monitored daily in the spring of 2009, and spawning areas were sampled using electro-fishing to ascertain if carp eggs were being consumed. While carp eggs disappeared within three days in the normoxic lake (which had many native fishes), they survived five days in a hypoxic lake.

Sampling demonstrated that bluegill sunfish (*Lepomis macrochirus*) were the primary consumers of carp eggs in the normoxic lake (94% of 49 fish found feeding on eggs were sunfish). Autumnal sampling found young carp in the hypoxic lake but none in the normoxic lake. This pattern of recruitment was observed again in the summer of 2010, and laboratory studies have since shown that bluegill sunfish actively consume both carp eggs and larvae. We conclude that if populations of bluegill sunfish can be maintained in lakes, they might control carp.
(Ramsey Washington Metro Watershed District and Minnesota Environment and Natural Resources Trust Fund).

Integrated Pest Management of the Common Carp

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The common carp (*Cyprinus carpio*) is one of the most abundant and destructive invasive fish in both North America and Australiawhere it has severely damaged shallow water ecosystems. Control presently focuses on nonspecific poisons and water-drawdowns and has not had sustainable success. Recently, we discovered that carp population abundance in the Midwest has little density dependence because recruitment is driven by seasonal environmental fluctuations that control native fish predation on young carp (Bajer & Sorensen 2010). This insight has permitted us to initiate an experimental integrated pest management (IPM) scheme which focuses on targeted adult removal using radiotagged Judas fish and pheromones while suppressing recruitment by limiting access to unstable nurseries and balancing native fish populations. A statistical model describes and guides this process. Using this targeted approach we have been able to suppress carp populations to about 10% of their initial levels in three local lakes for several years. During this time improvements in water quality have been noted. We believe that the lessons we have learned with common carp will be applicable to other invasive fishes (Funded by The Minnesota Environment and Natural Resources Trust Fund, Riley Purgatory
Bluff Creek Watershed District, Ramsey-Washington Metro Watershed District).