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I. Strategic Planning

During 2006, Chad Cook and Catherine Neiswender of UW Extension Winnebago County developed a rough piece on the structure of an AIS planning process. Using the grant language as a starting point, UWEX colleagues from Waushara, Fond du Lac, Outagamie and Calumet Counties were invited to brainstorm a planning process that included public participation elements. They were asked to identify how they would like to be involved (if at all) during the process. A document was developed that included major steps in the planning process, public participation steps, timeline, and potential techniques to be used. This was completed in October 2006.

In November 2006, a stakeholder list of organizations (and representatives) was developed by local representatives of UWEX, DNR, UW Oshkosh, and Winnebago Lakes Council. This list was used to develop a list of invitees for the AIS Advisory Group.

Staff were contracted to assist UW-Extension educators, Chad Cook and Catherine Neiswender to design a public involvement process. An AIS Planning Project Manager, Candice Mortara, was contracted by Winnebago Lakes Council (WLC) to work from April 2007 to March 2008. Winnebago County contracted a facilitator, Anne Forbes. Candice formed an advisory group and held meetings with them to begin to outline potential, feasible AIS strategies for the Lake Winnebago System. After the advisory group identified these potential strategies, they felt it was time to take them to the public for their reaction. Potential strategy ideas fell into the categories of Coordination/Cooperation, Education/Awareness and Incentive programs. Five public meetings (Oshkosh, Winneconne, Stockbridge, Fond du Lac, and Menasha) were coordinated and held around the Lake Winnebago System during September and October 2007.

These meetings were advertised via email, mail, radio and by posting flyers at boat launches around the lake. Seventy-eight (78) people attended the meetings. At each meeting, new ideas were gathered which resulted in a rich collection of diverse input to the planning process. Strong turnout at most of the public meetings and rich, animated dialogue indicate that this topic has widespread concern among water enthusiasts around the Lake Winnebago System.

The advisory committee met in November 2007 to review and discuss the summarized notes from the public meetings. Candice drafted the AIS report to include background information and a selection of potential AIS strategies that can be implemented in the Lake Winnebago System. Comments from the Advisory Committee members and partners (UWEX, UW Oshkosh, WLC) were solicited in Spring 2008. Mike Lizotte was asked to write a Preface as President of WLC to

provide some context about the grant and future plans. The draft strategic plan provides background material on the issues and process, describes potential Management Strategies and Actions (with subsections on: Coordination and Collaboration; Prevention; Monitoring and Early Detection; Rapid Response; Research; and Policy), discusses how future programs might be evaluated, and provides a checklist for implementation. Appendices are provided to summarize public comments and narratives used to engage the public in AIS discussion. The 45 page report is available online at www.winnebagolakes.org/projects-invasive.php.

II. Public Education

Clean Boats Clean Waters (CBCW): To address AIS in the Winnebago Pool Lakes located in northcentral Wisconsin, the University of Wisconsin Oshkosh and the University of Wisconsin Extension collaborated to launch a Clean Boats Clean Waters (CBCW) program. UW Oshkosh students were hired as watercraft inspectors, and were trained by CBCW instructors from UW Stevens Point and WIDNR to perform boat and trailer checks for AIS, distribute informational brochures, survey the public on their knowledge and awareness of AIS, and collect and report any new water body infestations. UW Oshkosh has hosted a large group training every spring since 2006 to train students who wish to apply for the summer internships, as well as volunteers and professionals from the region.

The student interest in half-time summer internships as watercraft inspectors exceeds available funding. Approximately 25 students apply each year for the 5-15 internships offered. While this has allowed us to be selective (on the basis of student enthusiasm and performance during the training sessions), it also means that the program could be expanded. Several strong candidates were recommended to and hired by other CBCW programs in the region (Door County and Green Lake County).

The Winnebago Pool Lakes CBCW program has been in effect for the past two years and CBCW members have collected a variety of information on boats and boaters at each launch, including, but not limited to: the type of boat, the motor horsepower, the presence of vegetation, any AIS prevention steps used, and awareness of AIS laws. These data have been entered to the DNR's SWIMS database. For 2006 (pre-SWIMS for watercraft inspection data), the data were only recorded by the DNR by County; for 2007, the data are available for individual launches. Based on the number of surveys completed per hour, we can provide a first-order estimate of the busiest launches on the Winnebago Pool (Table 1). They were located in or near the main cities and towns of Oshkosh, Fond du Lac, Neenah-Menasha, and Winneconne.

Table 1: Ten Highest Traffic Flow Launches For 2006

Launch Name or Location	Launch Name or Location
Columbia Park, Pipe	Winneconne Village
Rainbow Park, Oshkosh	Winneconne Park
Black Wolf	Lakeside West, Fond du Lac
Menominee Park, Oshkosh	County Park, Omro (Samers Bay)
Jefferson Park, Menasha	Stieger Park, Oshkosh

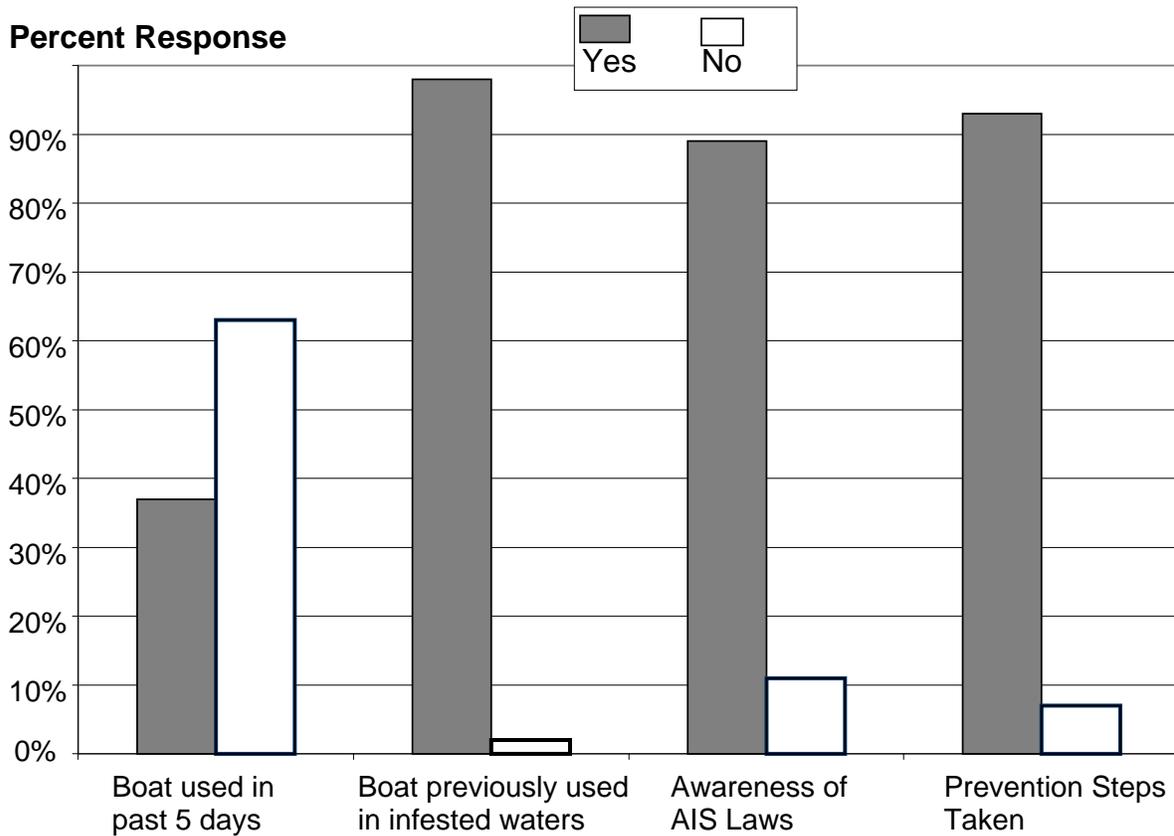
During 2006-2007, CBCW interns spent 1,920 hours at launches checking over 6,019 boats for invasive species, and surveying 10,350 boaters (Table 2). The number of interns was increased from 5 to 15 in 2007 (in part due to an additional grant from DNR to UW Oshkosh Center for Community Partnerships), and the focus on the experience gained in 2006 allowed for more targeted deployment at the busiest launches and best periods. Holidays and weekends were the main focus. But Kendall Kamke of the Oshkosh WIDNR office has also provided us with a list of all registered fishing tournaments on the Winnebago Pool, and gave us the excellent advice to focus on the 1-2 days before a tournament (usually Wed., Thu. or Fri.) to reach anglers when they may be more receptive to the CBCW message, and to avoid the same launches during tournament days (when anglers will be less patient or many will not be satisfied with their performance). Staff from WIDNR, the Winnebago County Parks Dept. and the Oshkosh City Parks Dept. were also helpful in identifying the busiest launches, and alerting us to newly opened launches (e.g. the new Winnebago County launch on Samers Bay of Lake Butte des Morts has turned out to be a very busy launch, especially with recreational boaters). Based on their advice, we abandoned the scheduling idea we originally proposed (assigning each intern a set of launches to cover) and instead held a weekly meeting to strategically schedule interns to cover the launches at best times and per-tournaments. Over the course of a summer, we covered all the known public launches in the system at least once (filling out DNR launch condition forms), but focused the scheduling on the goal of meeting the most boaters. Between 2006 and 2007, we improved efficiency as measured by an the increase of hourly rates of educating people and inspecting boats (Table 2).

Table 2: Annual figures for boats inspected, people surveyed, average hourly rates in 2006 and 2007.

	Total Boats	Total People Contacted	Total Hours by CBCW	Total People /Hour	Total Boats/Hour
2006	1764	2684	747	3.6	2.4
2007	4255	7666	1173	6.5	3.6
Average	3010	5175	960	5.1	3.0
Combined Totals	6019	10350	1920		

At the landings surveyed by CBCW members in 2007, 42% of boats leaving the water, and 14% of the boats leaving the landing had vegetation on the boat. Nearly 5% of the boats entering the water at the landing had vegetation on them. This is significant because Wisconsin law prohibits placing a boat or trailer into a waterway with plants or zebra mussels attached. About 37% of these boats had been used within the past five days (the recommended time to kill AIS plants and zebra mussels by drying), and 95% of these boats were last used in an infested water body (Figure 1). This high figure is partly explained by the size of the Winnebago Pool, where the majority of boaters reported that the last waterbody visited was in the Winnebago Pool System (usually the same launch). However, we often recorded boats reporting Lake Michigan or other waters as the preceding use site. Given the size of the boating population on the Winnebago Pool, these results indicate their remains a substantial risk for aquatic hitchhiking to and from the Winnebago Pool.

Figure 1: 2007 boater survey responses on boat use, understanding of Wisconsin law, and prevention steps.



Boater awareness of laws were over 80%, and claims to have taken prevention steps were made by over 90% of boaters (Figure 1). The main source of information was newspapers and other media (40%), but a significant portion (17%) reported watercraft inspectors as their main source (Figure 2). Signs at boat launches are apparently not a major information source (8%). These results suggest that public education campaigns announcing new invasive species infestations, such as the VHS virus in 2007, or new rules should focus more on mass media and face-to-face contacts and less on sign posting for effective education.

Table 3: 2007 boater sources of prior knowledge of AIS.

Source	Percent of Respondents
Newspaper/Media	40
Boat Inspectors/volunteers	17
Public Service Announcements	11
Publications	10
Signs at Launches	8
Presentations/Displays	7
Other	7

The goal of training and supporting a volunteer CBCW group of 100 was not met. Training sessions were only held in Oshkosh, and for only 45 people. Training was also scheduled for Calumet County in 2007, but canceled due to a lack of registrants. We contacted the Experimental Aircraft Association (EAA) about collaborating on inspections or training for their Seaplane base, but they declined and shared with us their advisory and AIS instructions to pilots. The volunteer goal was given lower priority in 2007, following discussion with Ron Martin of WIDNR Madison, in order to use our resources in response to the need for public education on the VHS virus and new regulations for boat cleaning and bait. This meant more training for interns and volunteers, updating as new education materials (e.g. flyers, signs, brochures) were released, and gleaned more information from the interns as to how the public was responding to the new rules and worries about this disease, and passing our observations on to WIDNR and UWEX staff involved in CBCW. While the main reason that the volunteer CBCW effort stalled was a lack of training, we also failed to develop a system for communication and encouragement of a volunteer group covering hundreds of miles of shoreline.

The student internship approach to CBCW has been a very successful effort to pilot a non-volunteer yet cost-effective means of providing watercraft inspectors. We have received supportive comments from the state CBCW leaders as well as inquiries from smaller programs across the state. The Winnebago Lakes Council was able to secure an AIS grant in 2008 to support CBCW student interns for summer 2008, and we are pursuing the possibility of having WIDNR support this effort as a contract in future years.

Citizen-based AIS Monitoring: Training of Trainers for AIS Monitoring became available in 2007, and Michael Lizotte attended the session at the State Lakes Conference. However, the goal of training 100 volunteers was given lower priority in the face of the VHS education needs in 2007 (as explained above). Training was provided to the CBCW interns for that season, and one training session was held in Oshkosh for 25 people. Educational materials (laminated Plant Identification sheets; Wisconsin Wildcard sets) were procured and assembled for placement in places that can be accessed by the public; the following sites have agreed to make the materials available: UW Oshkosh Aquatic Research Lab, UW Extension Winnebago County, Oshkosh Public Library, Menasha Public Library, Heckrodt Wetland Reserve (Menasha), Calumet County Extension Office, Fond du Lac City Library, and Winneconne Public Library.

III. Scientific Studies

UW Oshkosh student summer interns were hired in 2006 and 2007 for scientific studies. In 2006, 2 part-time interns were hired to study the distribution of current infestations in the Winnebago Pool. They made collections of plant material, photographs, and prepared herbarium specimens to confirm the presence of Eurasian watermilfoil, curlyleaf pondweed, narrow-leaf cattail, purple loosestrife, and flowering rush on all 4 lakes and in all 4 counties. The herbarium specimens have been submitted to the UW Oshkosh Herbarium, and should be listed on the state herbarium website, so that any searches by county or lake will result in a positive hit for these AIS. These students also visited all public boat launches on the system and filled out DNR forms for presence of Eurasian watermilfoil and curly leaf pondweed. They established and tested a protocol for rake sampling from a boat, but only completed a few stations on the west

side of Lake Winnebago before boat engine problems limited this sampling effort. In 2008, WIDNR continued up this study by hiring two interns to conduct a thorough survey of Lake Butte des Morts, including a high resolution survey of the Terrell's Island Marsh restoration area and adjacent marshes.

These surveys found that some AIS species appear to be expanding their range. Samples were also collected in streams from around the system to establish the presence of Rusty Crayfish throughout the system (records at the time of proposal only listed the Wolf River into Lake Poygan). This shows the importance of including the major Fox River and Wolf River watersheds in any comprehensive AIS management plan. The size of flowering rush beds also appear to be much larger and more widespread than initial reports from the 1970's. Possible explanations include selection for strains that are more fit for conditions in the Winnebago Pool, or possibly a response to changing environmental conditions since the 1970's (e.g. improved water quality or milder climate).

In 2007, an intern was hired to develop methods for determining the presence of hybrids of Eurasian watermilfoil and native Northern watermilfoil. This issue is important for predicting the impact of Eurasian watermilfoil in the system because the hybrid may be more resistant to natural control methods (watermilfoil weevils). DNR staff (Scott Provost) recommended this project to collect the first information about this issue in the Winnebago Pool (where pesticide applicators were applying for more and heavier application use permits on the basis of unconfirmed hybrid presence), as well as address the lack of in-state capacity to do this DNA-based testing. This research project was also supported by a UW System Teacher Quality Improvement grant because the student was a Secondary Education major.

IV. Outreach

Teacher Training: UW Oshkosh included AIS issues in a US-Department of Education-funded project, Aligning Inquiry-based Science Instruction. This was a two-year project for teams of teachers to implement inquiry-based science activities in their classrooms, and to align the state standards related to inquiry and personal and social perspectives across grade levels. In the first year of the project, 22 teachers participated in 3 weeks of summer institutes focused on engaging their students in an on-going scientific research project on a locally important environmental issue. The topic of aquatic species invasions was used as an overarching model for generating hypotheses that teachers had to use to demonstrate their understanding of the process of scientific inquiry. They received specific instruction on the use of online databases and field methods to help them complete two research projects; later discussions focused on teaching materials, especially those designed for K-12 and citizen-based monitoring in Wisconsin (e.g. www.dnr.state.wi.us/org/caer/ce/eeek/; watermonitoring.uwex.edu/wav/monitoring; www.uwsp.edu/cnr/uwexlakes/CLMN; www.wisnatmap.org/). Nearly all the participants were from local school districts (Fond du Lac, Oshkosh, Neenah) on Lake Winnebago, with the exception of 2 teachers from Bowler.

Public Events: Several products were produced for use in public events settings. Multiple posters were created on topics of urgent need (VHS and New Rules), CBCW (statistics from the

first two years of the project), and watermilfoil hybrid research. These posters have been used at several different events, including Walleye Weekend 2007 (Fond du Lac), Fox-Wolf Watershed Science Conference 2007 (Appleton), Natural Shoreline Expo 2007 (Oshkosh), and DragonBoat Races 2007 (Oshkosh). Another poster printed specifically for the AIS Regional Planning Exercises was a large map showing the lakes and municipalities so that people at the public sessions can see the jurisdictional challenges inherent in planning for the Winnebago Pool.

We also developed several different AIS-related Powerpoint presentations. One set is based on the CBCW Training materials, changing the focus to the AIS that are problems or threats to the Winnebago Pool, and incorporating the local CBCW statistics shown above. These have been used in CBCW training in 2008. Other presentations have been developed and continue to develop for specific uses and audiences. Chad Cook and Mike Lizotte developed a presentation for the Wisconsin Lakes Conference 2007 on the issues and challenges of AIS and CBCW programs on a large regional lake system. Mike Lizotte (representing UW Oshkosh and/or Winnebago Lakes Council) has made multiple presentations that change the focus for fishing groups (Winnebagoland Musky Club), shoreland owners (Winnebago County Natural Shoreline Expo in 2007 and 2008), civic groups (Oshkosh Downtown Rotary, Van Dyne Lions Club), and educational classes (Master Gardeners 2007, West High School, UW Oshkosh). We will look into permission to place these powerpoint presentations on the Winnebago Lakes Council Website (we only received permission for UWEX to use their materials in training activities).

At all the events listed above, we have been distributing existing printed materials. A volunteer helped us assemble about 1,000 sets of Wisconsin Wildcards and AIS Watch cards specific to the Winnebago Pool AIS species currently and seen as future threats. The packs were distributed at these events as well as by the CBCW interns at boat launches, specifically targeting children. These efforts continue with the current CBCW program.

With the discovery of VHS in the Winnebago Pool in 2007, we helped DNR develop and distribute materials locally. Our efforts in developing materials were primarily to be more efficient with printing the initial flyers, because the costs were coming from our budget (DNR sent out a color on white full page flyer that we condensed to half-sheet black print that we copied on blaze orange paper). We distributed 1,000 copies of this flyer over the summer of 2007. As they became available, we distributed the other DNR-produced materials, reporting to DNR that their flyer on VHS and Bait was extremely popular with our population.

The Winnebago Lakes Council maintained several outreach activities important to the project. Since the start of the grant, every issue of their quarterly newsletter has contained information about AIS issues, including an update on the progress of this project. Other features included AIS Prevention tips, statewide AIS news, research findings, and events. The WLC used a summer 2006 picnic event to highlight DNR efforts, with Charmaine Robaidek as the main speaker. WLC also financially supported the Winnebago County Natural Shoreline Expo in 2007, including tables with materials about the project and CBCW. WLC developed a webpage (<http://www.winnebagolakes.org/projects-invasive.php>) for this project. Its use has changed over time, and is currently used to maintain the latest copy of the regional AIS planning effort.