AQUATIC INVASIVE SPECIES

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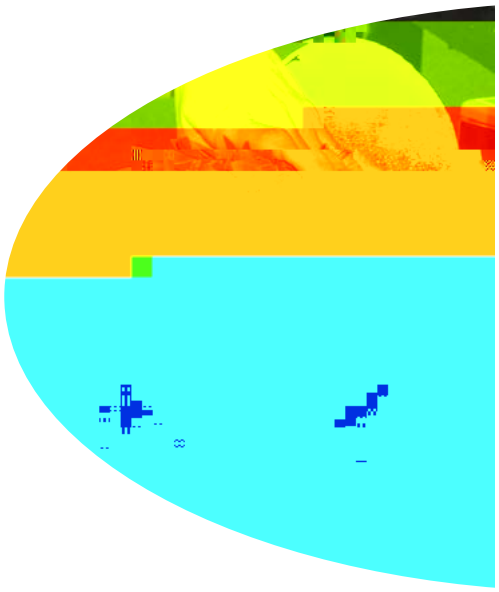
Written by: Mandy Beall

Autumn 2005

Aquatic Invasive Species Education Handbook



Minnesota has had an established state invasive species program since 1991, with heavy emphasis on using education to prevent the spread. They have targeted boaters and anglers with a nationally-accepted set of prevention steps (see Chapter 2 for more details). Survey results, as well as infestation levels, demonstrate that the approach has worked. In 2000, 90% of Minnesota boaters reported taking special steps to prevent the spread of invasive species when moving their boats. As of late 2004, approximately 160 inland Minnesota lakes had confirmed Eurasian water-milfoil infestations, compared to more than 400 in Wisconsin. Only 2 inland Minnesota lakes were confirmed to have zebra mussels, as compared to approximately 50 in Wisconsin. While not all variables in the two states are the same, the success in Minnesota is promising. Wisconsin's statewide program, the bulk of which started after 2001 (highlighted in Chapter 3), is based heavily on Minnesota's successful efforts.

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Surveys and data indicate that education can be extremely effective in preventing the spread of invasive species, but this battle will not be won with a statewide education effort alone. Numerous groups – schools, counties, towns, lake associations, businesses – have recognized this and are beginning to launch their own prevention education efforts. This handbook is designed to serve as a resource for those interested in aquatic invasive species education efforts. It includes a compilation of information on the state program, resources, contacts, and action strategies. It also provides some suggested approaches for designing successful local education efforts. The hope is that this book will serve as a resource for those who might be interested in taking on this issue but don't know where to begin! Finally, this handbook serves as a single place to go for information on the statewide educational resources and programs that exist in Wisconsin and ideas/suggested strategies on how to move forward with local aquatic invasive species education efforts.

W . . . . ?

Aquatic invasive species have major impacts on the waters of Wisconsin and our ability to enjoy them.

Ecological impacts – Invasive species have the ability to change aquatic systems and the plants and animals that live in them. Plants like Eurasian water-milfoil form dense mats that shade out native plant species. Zebra mussels encrust the shells of our native mussels, making it difficult for them to survive. These invasive mussels also consume the tiny plants and animals that young fish rely on for food. Wetlands overrun with purple loosestrife no longer support animals that depend on native plants for food and shelter.

Economic impacts – The costs to control invasive species are extremely high. Individual lake organizations spend tens of thousands of dollars per year to simply manage (not eradicate) invasive plant populations. Power plants and industries spend millions of dollars combating the zebra mussels that threaten to clog their water intakes. The Great Lakes support a $4 billion fishing industry that is also threatened by current and future invasives.

Recreational impacts – Invasive species have the ability to harm native sport fish populations – the decimation of lake trout populations by sea lamprey is a good example. Invasive plants often form dense mats that make boating, fishing r yo sheltwimminduicult for19.7(ebra mussels)]TJ ust the piof ,e Efecitns by ,

CHAPTER 2

This chapter provides a brief overview of some of the aquatic invasives species work taking place at a national level, specifically the contributions that have been made to information and education efforts focused on prevention of spread. This will hopefully lead to a better understanding of how the guidelines used in Wisconsin were developed. Additional information on national legislation is included in Chapter 3, after discussion of state aquatic invasive species laws. Numerous web sites from national programs and agencies are provided in Chapter 6 under Web Resources.

The Aquatic Nuisance Species (ANS) Task Force was created by the passage of the federal Nonindigenous Nuisance Prevention and Control Act of 1990 (NANPCA). The Task Force has since served as an oversight organization, coordinating national ANS activities and implementing NANPCA. The NANPCA mandates were expanded with the passage of the National Invasive Species Act (NISA) in 1996 (see box above). The ANS Task Force is chaired by the U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration, and consists of 7 federal agency representatives and 11 ex officio members. Task Force committees focus on a variety of broad issues, including risk assessment and management; monitoring; research protocol and coordination; communications, education, and outreach; and specific issues, including round goby control; recreational activities; and the Chicago waterways dispersal barrier.

Regional ANS panels also exist throughout the country, and their role, as established by Congress, is to advise and support the Task Force in carrying out its responsibilities in their region. The coordinators of each panel report to the Task Force. Wisconsin has been represented on the Great Lakes Panel on ANS since its inception in 1991. We are now also part of the more recently formed Mississippi River Basin Panel on ANS as well. Much is accomplished in these panels – working on a regional level brings in expertise from a number of states and has lead to numerous regional and even national collaborative projects, ranging from publication development to full-scale outreach and control initiatives.

The ANS Task Force also supports implementation of ANS prevention and control strategies at the state level. States submit management plans, and if approved by the Task Force, the states then receive federal funding for ANS activities. Wisconsin's plan was approved in 2003, and the state now receives federal money to supplement its state dollars to implement the plan. (A summary of Wisconsin's Comprehensive State Management Plan is included on the accompanying CD.)

While the work of the national Task Force sounds good, it may be hard to see direct benefits/impacts on the work being done in Wisconsin, aside from the funding we're receiving. However, the Task Force leads the development

of the nationally accepted voluntary guidelines for recreational users. This is an example of work at a national level that is linked directly to education initiatives in Wisconsin.

In NANPCA, recreational water use, including boating and angling, was recognized as a means of transport and spread of aquatic invasive species. The Task Force was charged with developing voluntary national guidelines (with supporting information and analyses) to prevent the spread of aquatic invasive species through recreational activities. It established a recreational activities committee to draft the voluntary guidelines. The committee members represented state and federal natural resource agencies, as well as boating, fishing, and aquaculture interests.

The Great Lakes panel had already developed several guidelines after confirming with a survey that different members were promoting different messages, and therefore boaters and others were likely confused about what to do. The national committee used these guidelines as a starting point. However, it still took them four years and a great deal of work to come up with the guidelines that finally received federal approval (published in the Federal Register, December 28, 2000, 65(250): 82447-82451).

The goal of the voluntary guidelines is to provide clear, concise information for distribution to the public identifying specific steps that can be taken to avoid the transport of aquatic invasive species. A great deal of work was put into insuring that the guidelines were simple, effective, reasonable, and easy to read. The benefit to developing national guidelines is consistency throughout the country – boaters, anglers, and others who visit many different places should see/hear the same basic message in a variety of contexts and from different sources (see photo of sign from Illinois/Indiana below). For this reason, it is important that WI DNR, WI Sea Grant, University of Wisconsin-Extension and any others in the state working to educate the public on this issue use these guidelines!

Prevention steps for boaters and anglers should basically be as follows (with only minor differences, "wash" instead of "rinse" might be an example), often with an accompanying graphic:

- Inspect and remove aquatic plants, animals, and mud from your boat, trailer, and equipment before leaving the water access;
- Drain water from your boat, motor, bilge, live wells, and bait containers before leaving the water access;
- Dispose of unwanted bait in the trash;
- Spray/rinse boats and recreational equipment with high pressure and/or hot tap water (> 104˚ F), especially if moored for more than a day, OR
- Dry boats and equipment thoroughly for at least 5 days.

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These are the steps you will see in publications from other Great Lakes states, as well.

The steps are simple, easy to follow, and always presented in the same order. They are demonstrated by watercraft inspectors at boat landings. These prevention steps are the basis for any education materials developed at a statewide level that target boaters and anglers.

Similar steps were developed for other water recreation activities, including SCUBA diving, waterfowl hunting, and personal watercraft use. Many of these are included in the "Help Stop Aquatic Hitchhikers" brochure (see resource section). To view these steps, you may also visit www.protectyourwaters.net, the web site for the national Stop Aquatic Hitchhikers! campaign. See Chapter 8 for more detailed prevention steps.

TOP TO BOTTOM

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About the grants

Aquatic Invasive Species (AIS) Control Grants are designed to assist in a state/local partnership to control aquatic invasive species. The DNR was directed to establish procedures to award cost-sharing grants to public and private entities for up to 50% of the costs of projects to control inva-

Wisconsin Sea Grant has been working in aquatic invasive species (AIS) prevention since the mid 1980s when zebra mussels were first found in the Great Lakes. They offer a range of publications on AIS as well as water quality, K-12 education, marine safety, habitat restoration, fisheries, and coastal engineering. They also have a strong Geographic Information System (GIS) program and are part of a network of eight Great Lakes Sea Grant programs that work together to provide information and outreach to Great Lakes residents and users.

The Sea Grant Nonindigenous Species website (www.sgnis.org) offers publications and abstracts available online. Many of the publications are peer-reviewed but some additional literature is available as well. SGNIS offers an extensive kids' area with information and activities involving invasive species. In addition to articles, SGNIS provides AIS photos for presentations and publications. Low-resolution photos for slide presentations are available online and are available at high resolution upon request.

Volunteers statewide are looking for opportunities to help in the fight against invasive species. The following statewide programs offer opportunities to get involved with invasive species and other water quality issues.

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Case studies highlighting groups that have implemented these programs in their communities are included in Chapter 5.

In 2002, a group of students from northern Wisconsin researched the impact tourism had on their town, Minocqua, and the devastating impacts aquatic invasive species could have on the surrounding lakes. They proposed an action plan to prevent the spread of an invasive aquatic plant, Eurasian water-milfoil. The Christopher-Columbus foundation, recognizing innovative ideas from young people, awarded this group $25,000 to develop and market an educational tool kit for boaters along with a volunteer watercraft inspection program, and the Milfoil Masters program was born (see Chapter 5, page 58 for a case study). This successful project worked to create an awareness of invasive species and the steps each boater needs to take to prevent their spread.

Within a year, the DNR Invasive Species Program allocated funds to continue the momentum started by the Milfoil Masters. A new expanded program, Clean Boats, Clean Waters, grew out of this successful project.

Aquatic Invasive Species Laws

A number of state statutes and administrative rules (which have the force of law) have been established in Wisconsin to regulate some component of aquatic invasive species introduction, control, or spread. Several of these are summarized very briefly below. The actual statues and administrative rules can be viewed in full online. Wisconsin Statutes, promulgated by the State Legislature, can be found at www.legis.state.wi.us/rsb/stats.html, and administrative rules, promulgated by state agencies such as the DNR, can be found at www.legis.state.wi.us/rsb/code/. For direct links to several of the statutes and rules listed below, visit the National Invasive Species Council web site at www.invasivespecies.gov/laws/state/wi.shtml

For years, Wisconsin had a variety of statutes and administrative rules that dealt with exotic species, but 2001 Wisconsin Act 109, which was a state budget adjustment bill, established a statutory framework for the comprehensive state aquatic invasive species program (statewide program; invasive species council; watercraft inspection program; reporting process to the legislature; re-writes of statutes dealing with nuisance weed [purple loosestrife and multiflora rose] control, research, education; re-writes of statutes dealing with aquatic plant permits; regulations prohibiting the launch of boats with plants or zebra mussels attached).

(In statutes below, "the department" refers to the Department of Natural Resources):

s. 15.347 (18) Governor's Council – establishes criteria for the invasive species council membership and meetings.

s. 23.22 Invasive species – Definitions; includes department responsibilities in establishing a statewide program; specific duties of the Governor's council, including subcommittees; watercraft inspection guidelines; reporting guidelines.

s. 23.235 Nuisance weeds – Includes purple loosestrife (and multiflora rose); law prohibits their sale or distribution; directs the department to develop a state-wide plan to control purple loosestrife,

C. [illegible]?

As noted above, differential fees can only be charged on the basis of residency within the unit of government maintaining or operating an access site. A special fee based only on riparian ownership or lack thereof would not be appropriate.

C. [illegible] (...)?

Boat launch fees can not exceed the maximum allowable amount established under s. NR 1.91 (11), Wis. Adm. Code.

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Under s. 30.50(2), Stats., a boat means “every description of watercraft used or capable of being used as a means of transportation on water, except a seaplane on the water and a fishing raft.” Relying on this definition, canoes and kayaks could be required to pay a launch fee, but a fee could not be charged for scuba equipment. However, no more than the base fee may be charged for a canoe or kayak as they are non-motorized or non-trailered boats. A non-motorized boat is a boat which is not a motorboat but which is designed and constructed to be used as a boat for transportation of a person or persons on water. This term includes, but is not limited to, any canoe, sailboat, inflatable boat or similar device, row boat, raft and dinghy which is not a motorboat.

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Normally launch fees are collected through the use of launch attendants who are on duty during the day or through the use of an honor system, where the user voluntarily pays for launching when no attendant is on duty.

D. [illegible]?

Launch fees are the responsibility of the municipality that is operating the launch site. Any questions or concerns concerning the reporting of launch fees should be directed to the municipality that maintains the launch site. The DNR’s jurisdiction or authority h sitty 1lE(R)40m allowablructs ds.5 9tini87(h s1gta of2t)Tj T* [(pays 156 Tms -n watsty of ton)]TJ T*.5 teed to badmefi

There are no existing state guidelines for the construction, placement and use of permanent boat wash stations.

There are no state guidelines for portable washing stations.

Washing as a condition of access may be required only if a boat wash facility is readily available for public use, no fee is required for the use of the boat wash facility and the requirement does not unreasonably exclude any boat from access to public waters.

A lake association/district would nei286 TD 241ission of 6 TDDNR to place a boat wash facility on an access area owned by the state. In such circumstances the lake association or district would nei286o enter in6o a land use agreement (lease) with 6 TDDNR. Such agreements would include an assumption of all risk by the o 24ator and an insurance requirement.

Yes, this could be accomplishi286 rough an o 24ational lease86 at would include indemnification clauses.

Closing a public launch site by a county or town would be viewed as an abandonment of a public access, which would requireDDNR approval. T TDDNR may grant an abandonment only if the access site or part thereof proposi286o be abandoned or discontinued is replaced prior to granting 6 TD 2tition, or the access proposi286o be abandoned does not contribute 6o 6 TDquality or quantity of public access on the body of water. In addition, an access site may be abandoned where environmental degradation is occurring at the site as a result of existing use, and abandonment of the access will reduce or eliminate the degradation without reducing public interests in access to 6 at body of water.

T TDDNR's authority does not apply to cities and villages, but court approval may still be required if the access site is part of a platted subdivision or if the site

is considered part of a highway and objections from adjoining landowners are received.

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A local ordinance may place conditions on the use of a launch site and limit access if boats are not washed, only if a boat wash facility is readily available for public use, no fee is required for the use of the boat wash facility, and the requirement does not unreasonably exclude any boat from access to public waters.

CHAPTER 4

Say you are ready to change the behavior of boaters in your community so that

may find useful – U.S. EPA and Cooperative Extension fact sheets that focus on community-based education, resources on how adults learn, and other tips for reaching adult learners.

You may also consider visiting the UW-Extension Program Development and Evaluation Web Site at: www.uwex.edu/ces/pdande for a number of excellent resources on program planning and evaluation.

In 1994, Minnesota Sea Grant conducted a survey of registered boaters in Minnesota, Wisconsin, and Ohio to gain a better understanding of what aquatic invasive species information boaters had, where they got it, and what they were doing (if anything) to prevent the spread. While there are a number of possible mechanisms for aquatic invasive species transport, boaters are known to be one of, if not the, most significant vectors for transport of the species between water bodies.

(taken from “Getting in Step: A Guide for Conducting Watershed Outreach Campaigns,” a U.S. EPA publication)

The following steps to developing your outreach campaign are discussed below:

① Define the driving forces, goals, and objectives

② Identify and analyze the target audience

③ Create the message

④ Package the message

⑤ Distribute the message

⑥ Evaluate the outreach campaign

Consider what’s driving the need for an outreach campaign. This will help you determine the scope of your campaign and focus on exactly what you’ll need to do to get the job done. Usually, the driving force centers around a specific issue and, if you’re reading this hand book, that issue probably has something to do with aquatic invasive species, and perhaps a desire to help prevent their spread.

The next step is to identify your goal. Maybe your community does not yet have aquatic invasive species problems, and your goal is simply to raise awareness of the importance of the lakes in your area and, because of the potential impacts of invasives, the need to protect them. Or, you might be quite concerned about the spread of invasive animals through bait bucket releases or invasive plants from water gardens, so your goal may be to change the behavior of area anglers or gardeners, encouraging proper disposal of unwanted bait and plants in the trash.

Whatever your goal, once you’ve identified it, you can develop several objectives for trying to reach it (ask yourself, “How am I going to do this?”). Objectives should be SMART: specific, measurable, action-oriented, relevant, and time-focused. The basic idea is to keep your desired goal/outcome in mind – do you want to create awareness or encourage action by a specific group (anglers or gardeners, for example)? The more specific you’re able to make these objectives; the easier it will be to know if you’ve actually achieved them! For example, if your goal is to raise awareness of the invasive species issue, one objective may be to arrange presentations or exhibits on the subject at three scheduled events in the coming year – fairs, festivals, river clean-ups, etc.

89% of the registered boaters that responded to the survey were male. Because we use public service announcements as one method to reach this target audience, we asked what types of radio stations they listen to. The top three answers were oldies/classic rock music (58%), country music (45%), and talk radio (42%). Therefore, we will target these types of radio stations when purchasing air time. We can combine this with other data that did not require a survey – knowledge that boaters are out in largest numbers on the weekends, and particularly on holiday weekends (Memorial Day, July 4th, Labor Day). So, to get the most bang for our buck, we might try to purchase air time on the sorts of stations mentioned above and at times close to/during big boating weekends. And, we might target the public service announcement message towards males, since they are the largest component of our audience.

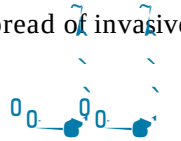
Surveys also help you to understand your audience's motivation for taking action or, sometimes more importantly, NOT taking it! This prevents you from having to guess. For example, it might be easy to assume that most boaters who aren't taking action to prevent the spread of invasive species feel that it won't really help prevent their eventual spread, or they might not even believe that these species are really a problem. If you're operating under such assumptions, a lot of your education effort may go toward trying to convince boaters of the severity of the problem, or convince them that the prevention steps really do work and can prevent the spread. Another commonly assumed excuse for inaction is inconvenience – perhaps people don't feel they have the time to take precautions. If you are working under this assumption, you might focus effort on convincing people that the steps are very simple and take very little time. However, all of these things are really just guesses, and in fact NOT what were found to be the primary reasons for inaction in the boater survey.

Of the Wisconsin boaters surveyed who reported that they moved their boats between water bodies in 2003, 80% stated that they do take special steps to prevent the spread of aquatic invasive species (up from 39% in 1994!). Of the 20% who said they don't take special precautions, the single biggest reason reported was that they didn't know exactly what to do (43%). The next highest percentage (41%) reported inaction because boat washing equipment wasn't readily available. (Percentages total more than 100 because respondents were asked to circle all that apply).

What about the "assumptions" for inaction mentioned above? Only 2% didn't believe aquatic invasives are a problem, only 4% didn't believe special precautions will prevent the eventual spread of invasives, and only 9% said that taking these steps is inconvenient (don't have time). So, what does this mean? First, it indicates that efforts to raise awareness about invasive species have been successful. Most people know that invasive species are "bad" and even that boater actions are important. In fact, they're important enough that most people don't blame inconvenience for not taking action. So, education campaigns may not need to spend a great deal of effort trying to convince boaters to care about inva-

even without detailed knowledge of individual species, was enough to convince boaters that taking precautions was important.

Instead, the survey points to the need to take the next step, focusing on teaching boaters exactly what to do to prevent the spread of aquatic invasive species. Watercraft inspectors at landings, for example, can spend time one on one with boaters working through the prevention steps with them. The fact that many perceive boat washes as necessary for prevention also indicates the need for more emphasis on the prevention steps themselves. While washing boats is one step that definitely helps to prevent the spread of aquatic invasives, there are simple steps (inspecting and removing plants and animals, draining water, and disposing of bait in the trash) that are extremely effective, can be done right at the boat landing, and do not require any special equipment. So, making sure that boaters understand all of the steps should also be a priority. There will likely never be boat wash facilities at every landing in the state, but that doesn't mean that boaters can't be effective in preventing the spread of invasive species!



Have I defined the audience in a way that separates it from the general public?

How many target audiences or segments have I identified?

Have I segmented the target audience so that I can develop messages for each subgroup?

Is the target audience for each objective sufficiently defined?

Have I identified the communication channels used by the target audience?

Have I collected enough data on the target audience?

How long will it take to collect survey data on the target audience?

Do I understand the target audience?

Do I know what is important to the target audience?

Do I know what barriers prevent the target audience from changing its behavior?

Are there barriers to accessing the target audience that can hinder the plan?

After you have information about your target audience, it's time to work on a message that will reach them and help achieve your objectives. Your message should be different then simply restating your objectives – objectives describe final results; messages prompt the knowledge, attitudes, and actions needed to achieve them. You can take a

and after noting if these items had already led them to take action, the boaters were asked to choose up to four of their "very effective" items that they feel would be **most** effective in getting them to take action. The top responses were as follows:

- ✘ A desire to keep aquatic invasive species out of our waters (51%)
- ✘ A sense of personal responsibility (45%)
- ✘ Signs at marinas and boat launches (35%)
- ✘ Laws or regulations to prevent the transport of aquatic invasive species (28%)
- ✘ Fines that must be paid by violators (26%)
- ✘ Enforcement checks on the road or at boat launches to catch violators (23%)
- ✘ Fishing or boating regulation pamphlets (23%)
- ✘ A desire to prevent damage to my boat or equipment (21%)
- ✘ Talking with friends or acquaintances (20%)
- ✘ Media sources (newspapers, radio, TV) (18%)
- ✘ Brochures, species ID cards, fact sheets, other printed materials (14%)

(A number of additional items fell below 10%.)

Many of the answers in the second question are likely to come in handy during other steps of the planning process. Perhaps your goal or objective (Step 1) is to increase local enforcement of aquatic invasive species laws. Or, maybe knowledge of the strong desire to keep invasive species out of our waters and the sense of personal responsibility noted by boaters would be helpful in crafting your message (Step 3). However, when taken together, the two questions are also helpful in determining how to best package the message to reach boaters.

Not only did boaters say that they had learned about this issue through signs, but these signs were one of the most effective tools in getting boaters to take action. So, this supports continued sign posting at public landings by DNR staff, and encourages local groups to get involved in helping to install these same signs at private/smaller landings. Fishing and boating regulation brochures were also seen by many and cited as an effective tool in promoting action by boaters. So, the DNR will continue to improve its placement of prevention information in these publications. Media sources also ranked high, both in terms of visibility of the message and effectiveness. This information can be used by the statewide program, which will continue to issue press releases and participate in radio and TV interviews. Local groups considering education initiatives should be encouraged to use the media (something that is discussed further on the following pages).

Negative survey responses are also very informative. Internet web sites ranked

As evidenced in the survey questions discussed above, people tend to get their information from the media. It reaches large numbers of viewers/readers with each edition. News media are effective, widely available, and often FREE.

It is useful to develop a relationship with the media in your area. You may want to introduce yourself to local reporters before ever submitting a story. This will help you to understand what the reporters need and help them to understand a bit more about your efforts. Maybe then they'll even call you if they are covering a related story!

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A v, _ _ n w th TV or Rad o PSA	• Ca be free to a r • Ca reach a large aud e ce • Ca focu o target aud e ce • Ca rov de follow-u through toll-free med um (hotl e or Web te) • TV ad rov de h gh m act a d the ab l ty to demo trate a behav or	• St ff com et t o for a r t me • Very a ve • D ff cult to evaluate effect ve e • Ca be ex e ve to roduce TV PSA of u table qual ty • Short format ofte doe ot allow for more tha aware e • L ttle co trol of a r g w thout ay g; omet me a red later at ght • Me age ca be ob cured by commerc al clutter • Target aud e ce m ght ot be watch g/l te g whe advert eme t a red	• Eve t • Fu dra er • Bu ld g aware e
V . .	• Ca d cu a ue de th • Have co trol over the co te t • Ca be v ually a eal g • Ca a r o cable telev o tat o	• H gh co t • Hard to do well • Need a good d tr but o mecha m	• Work ho • Publ c educat o • School
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(taken from "Getting in Step: A Guide for Conducting Watershed Outreach Campaigns", a U.S. EPA publication)

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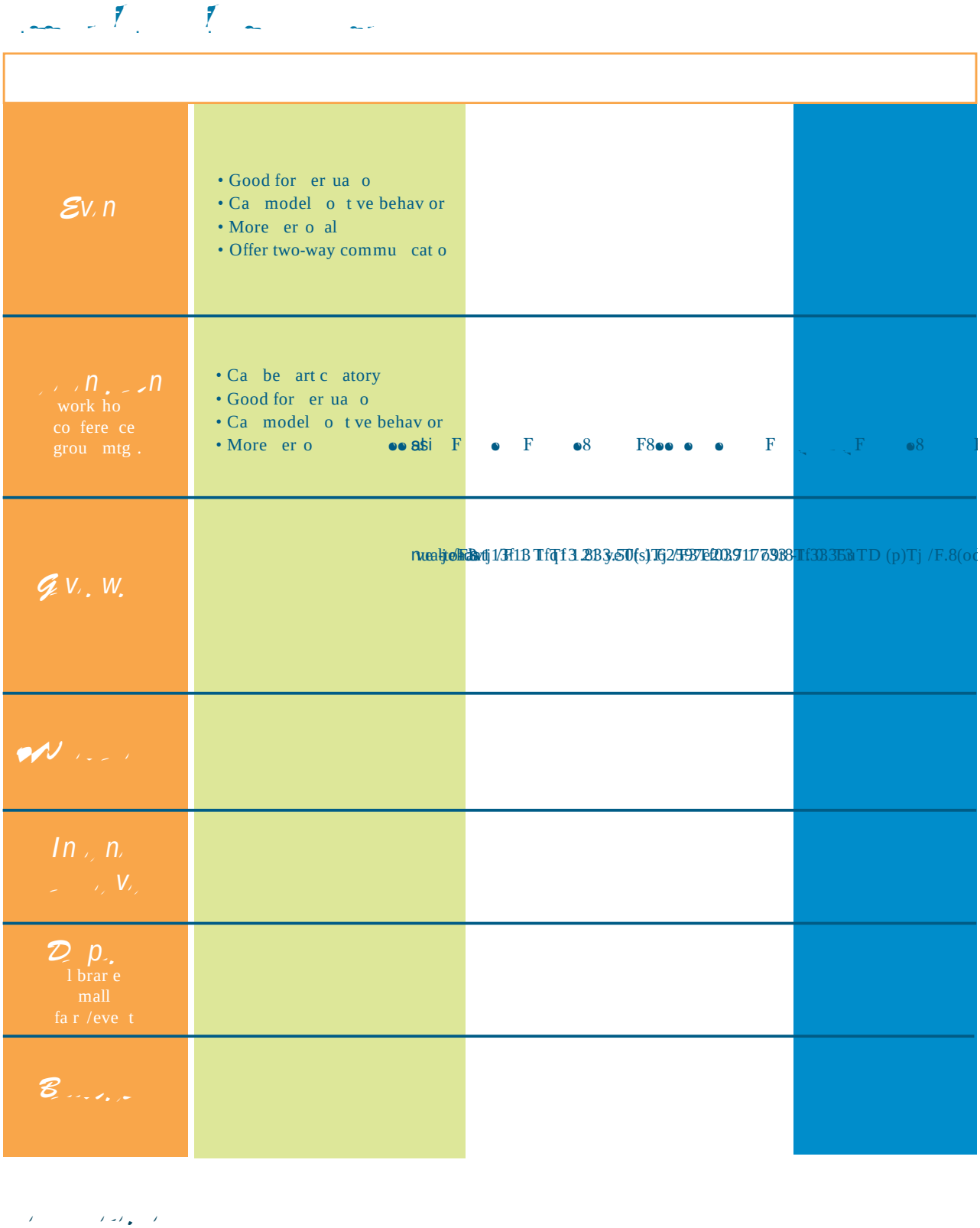

News releases supply reporters with the basics they need to develop a story. You may choose to write them in a style that can be used “as is”, though many reporters will choose to rewrite the stories. When reviewing news releases, reporters typically look for a local connection – a local person, city, county, or water body. You can use news releases to announce upcoming events, highlight community efforts, discuss policy issues, etc. Releases should be sent a few days before reporters’ deadlines, and you may want to place follow up calls to the reporters to confirm that the release arrived and answer any questions.

News releases are usually one page long, but they can be longer if the subject is sufficiently important. When writing a news release, start with the local connection and "news nugget" – the most important element – first. Then present supporting information, putting the least important material at the end. It's important to grab the reporter's attention in the first paragraph. Quotes from a spokesperson can be included, although many newspapers might want to confirm direct quotes prior to publication. What makes the news? To increase the chances that your release will be used, keep in mind the elements reporters look for in a news story.

Your release doesn't need to have all the elements listed below, but the more of them you include, the better your chances for coverage:

- ✘ Involve local people or issues/documented statistics
- ✘

Though some radio and TV stations will play Public Service Announcements (PSAs) for free, it may be at undesirable times (like 3 a.m.) and you won't necessarily be assured of reaching your target audience. So, many groups choose to

G veaway	Mag et	$300 for 2-color bu e card ze
	Po ter (11" x 17", 4 color , glo y a er)	$1,000
	Ca va Tote Bag 1 color, 2 de 2 color , 2 de	 $3,100 $3,850
	St cker (o e color, 3" d ameter)	
	La el	
	Key holder	
Pr ted mater al	Pr ted fact heet (2- ded) 1 color 2 color 4 color	
	Tr fold a el brochure (11" x 25.5") 1 color 2 color 4 color	

D lay booth	Tableto	
	10' x 10'	
Bu advert eme t	Pa el o bu ter or (bu board)	
	V yl Pa el o e t re bu exter or	$1,250/mo th er bu (fee may be h
B llboard	B llboard	
Web te	Reg ter doma ame	
New a er ad	4" x 6" ad	
Mov e theater	30- eco d PSA	
Other	Stock hoto o a CD-ROM	

When done right, an oral presentation can be a great way to reach your target audience. It takes time, planning, and practice to craft a well-organized and interesting presentation that conveys your message. Avoid reading slides to your audience and be sure to mix in plenty of

d staff needed to

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e enough materials for the er

Once you have packaged your
Yo ve likely already thought about thi
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ibution are by direct mail, door- sses
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sentations, as handouts at ever rials
ublic places. Consider which er
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program pays for is the p
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take action (see on page 35), boaters scored "talking
acquaintances te high. In fact, 20% of those who responded listed
the top 4 mo effective items at getting them to take action to prevent the sp
invasive sp cies. So, involving members of your target audience, or other trusted
figures, in delivering the message might add to its effectiveness.

Th mail can be a great way to get information out to your audience, assuming you
h e access to mailing lists. Post cards are the most inexpensive option, but the postal
rvice has size restrictions to qualify for post card rates: at least 3.5 inches high by 5
nches long by .007 inches thick and no more than 4.5 inches high by 6 inches long
by .16 inches thick. Letters allow you to send more items – newsletters, surveys, etc.
They, too, have size restrictions to be eligible for the standard postage rate – at least
the size of a post card up to 6 inches high by 11.5 inches long by .25 inch thick. The
postal service will charge more for items that are irregularly shaped or too thick, so

consider this carefully when putting mailings together. You can also ship larger sized letters and envelopes, but the more they weigh, the more it costs. For information on bulk mail and other mailing costs, visit the U.S. Postal Service Web Site at www.usps.gov.

Email is a cheap and fast way to get messages and materials out. However, be sure to keep email lists up to date so that you don't get 100 returned messages with every one that you send. Also, use email lists sparingly – if you start sending too many messages, you run the risk of being deleted!

Timing is also important. If you're encouraging residents to monitor for invasive plants in their lakes, December is not the best time to send a postcard. They will likely forget by spring. Also, people receive a lot of mail around the holidays. If you send bulk mail items between Thanksgiving and New Years, you run the risk of having them lost in the holiday shuffle.

Distribution can also require considerable time – think about how to staff your effort.

encouraging. Coupled with the information gathered about where boaters are getting their information on invasive species and which sources of information are most effective, the data helps to show that the statewide education efforts are reaching boaters and are resulting in desired behavior changes.

indicated that they are not getting much of their information on this topic from the internet, and that this source is not very likely to get them to take action. Does that mean that internet sites on the subject are useless? No… in fact, many resource professionals and others rely on them for information. However, it would be difficult for the DNR, Extension, and Sea Grant to justify putting money into web resources specifically targeting boaters based on the survey results.

Adaptive management is a widely-promoted approach to program planning and evaluation. By evaluating your campaign along the way, you can continually improve your goals and objectives, messages, distribution mechanisms, etc. Can you evaluate every single thing you do? Probably not. However, you can look for opportunities to gather information that will prove useful. Three different sets of indicators that your outreach evaluation may include are:

– These are related to the execution of the program itself (activities). For example, did you hold all of the workshops you had scheduled and did people attend (and how many)?

– These are related to achievement of the goals/objectives of your program. For example, the statewide boater survey looked at the effect of the overall education effort (and specific products) on getting boaters to take action to prevent the spread of invasive species.

– These are related to how the community/public as a whole perceives the project. For example, were volunteer watercraft inspectors well received by boaters at boat landings?

Process Evaluation

Are the planned activities being implemented according to schedule?

Once you have a plan i ve planned! Develop a “to do” list from y to figure out who’s going to do what, deadlines, expenses, etc. The key is to outline your plan based on what will achieve those objectives that you identified way back at the beginning of your planning process.

You are going to need three primary things to launch your outreach effort: people, technical support, and funding. Partnerships with other groups, organizations, or individuals can help with all of these things, bringing in more people, more expertise, and possibly even more financial resources (several of the case studies in the following chapter illustrate the importance of partnerships). Consider other organizations in your community that are interested in aquatic invasive species issues, that have a network of dedicated volunteers, or that have a vested (perhaps business) interest in the protection of lakes,

D[illegible]

Designing an Effective Communication Program: A Blueprint for Success
This handbook will guide you through the crucial steps involved in designing an environmental communication program. From designing your program to increasing the effectiveness of communication materials, this guide has it all. It's available through the University of Michigan, School of Natural Resources and Environment, Ann Arbor, MI 48109, at (734) 764-1817.

Directory of Funding Sources for Grassroots River and Watershed Conservation Groups 2001–2002 The directory profiles foundations, corporations, state and federal agencies, and nonprofits that support small, nonprofit watershed groups, as well as a few sources that support tribes. It includes contact information, grant sizes, and a brief description of each source's particular interests. Contact River Network at (800) 423-6747. www.rivernetwork.org

Partnerships: A Field Guide for Nonprofit Organizations and Community Interests
This guide introduces partnerships and explains what makes them successful and how to make them grow. It's available from the Management Institute for Environment and Business at (202) 833-6556, or call The Dryden Press at (800) 782-4479.

Getting in Step: Engaging and Involving Stakeholders in Your Watershed
This guide provides the tools needed to effectively engage stakeholders to restore and maintain healthy watersheds through community support and cooperative action. Available online.
www.epa.gov/owow/watershed/outreach/documents

Getting The Woog StakeeTm14ededEandhf 0 -1.4286 TDedsThis guide providide yT* [(con horprcommh spr.7(vca.79

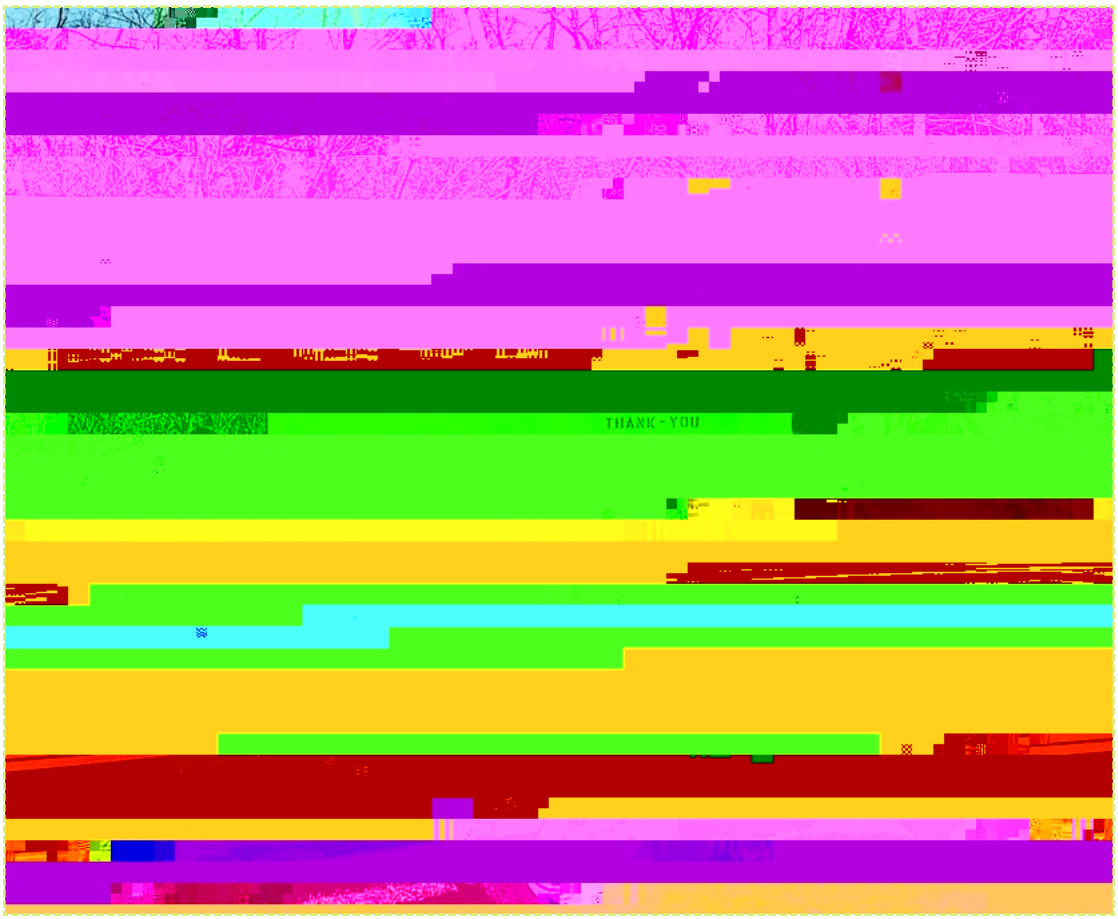
Developing a Communications Plan: A Roadmap to Success

This guide provides a roadmap for developing a communications plan. Readers can learn valuable processes, such as prioritization exercises and feasibility screens, as well as how to manage the challenges of building an effective consumer education plan from the ground up. Available from the Huron River Watershed Council (HRWC), 1100 North Main Street, Suite 210, Ann Arbor, MI 48104. Phone:

CHAPTER 5

Although there is support from the state, regional, and even national levels, much of what is being accomplished in fighting the spread of aquatic invasive species is happening county by county, lake by lake, person by person. Individuals are volunteering to spend time at boat landings talking to boaters; lake associations are devising strategies to help educate members of their communities about the invasive species issue; and classrooms are raising beetles to control purple loosestrife. This chapter provides a number of case studies featuring groups that have taken this issue on locally.

Many of the groups profiled below are involved with one or more statewide volunteer programs, including Clean Boats, Clean Waters, Purple Loosestrife Bio-control, Adopt-A-Lake, and Self Help. Information about these programs, including how to get involved, is included in Chapter 3. Many groups received funding for their projects through DNR Aquatic Invasive Species Grants or other DNR Lake Grants. Information about the grants can also be found in Chapter 3.



FRANK KOSHERE

Youth leading boater education efforts in their community and statewide

case study details provided by Laura Felda-Marquardt

C[illegible]: Clean Boats, Clean Waters Program Coordinator: (715) 365-2659

W[illegible]?

In 2002, three middle school students from Minocqua/Hazelhurst/Lake Tomahawk (MHLT) Middle

DCALS wrote and paid for bi-monthly public service announcements in the local shopper. The group

Crescent Lake inspectors logged 153 hours of volunteer inspection time during the summer of 2004.

c.

The only cost was the $25 fee for the Clean Boats, Clean Waters workshop and materials.

Purple loosestrife bio-control with the help of partnerships

Case study details submitted by Charlie Shong

MINNESOTA SEA GRANT

Lake Pewaukee Sanitary District: (262) 691-4485

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The Lake Pewaukee Sanitary District is involved with numerous water quality issues in and around Lake Pewaukee, including aquatic invasive species. It has been working to control Eurasian water-milfoil in the lake since the mid-1960s. Purple loosestrife is another problem species within the sanitary district. Supported by the Hartland Rotary Club, itself already involved with purple loosestrife control efforts, the District started a purple loosestrife biological control program in 1998 to help battle this invasive plant.

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The District teamed up with a 6th grade class at Pewaukee Middle School to start its bio-control efforts. They received training from the state Purple Loosestrife Bio-control Program Coordinator, going through him to purchase the beetles they would rear. A great deal of help came from the Heartland Rotary Club, a local group that was already participating in the program. Up to 20 members of this club teamed up with the District and the students to help prepare plants and raise beetles for release. The beetles from this first year were released in the Village of Pewaukee along the Pewaukee River. Pewaukee Middle School 6th grade participated in this program for four years.

The District has continued to raise the Galerucella beetles on 14 plants annually and has teamed up with the Lake Country Rotary Club in Oconomowoc and the Women's Club of Pewaukee, which have now taken over the efforts started by the District and the Middle School. Oconomowoc Middle School has also gotten involved, expanding the bio-control efforts in the area.

C.

Costs for the bio-control efforts have been fairly small, consisting of purchasing beetles and nets, pots, etc. used to raise captive beetles on purple loosestrife plants. The District has covered these expenses using money from its water resources fund (which runs on donations).

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One of the keys to starting a successful bio-control program was relying on the experience of the Hartland Rotary Club. Because they were already involved in purple loosestrife biological control, the Rotary club was able to provide valuable guidance when the District was getting started, pitching in to help the students with their efforts, and answering questions when things didn't go as planned.

One challenge in working with students on this project is that the beetles hatch and are ready for release in July, when the students aren't in school. It is a bit harder to bring them back together for the release of the beetles that they worked to raise during the school year. Partnering with an adult group that can help with the release during the summer is helpful.

For the first few years, the District and the school released a relatively small number of beetles at a number of scattered purple-loosestrife infested sites in the area. They saw little to no results on these sites at first, because the beetle populations were still quite small. But, in the summer of 2003 they were looking for a good location for the Women's Club to release beetles upstream of the other sites, and found a location that already had beetles! Since no one else had released in the area, they were sure that these had come from the 1999 release. They went back and checked the original site and found many plants with damage and numerous beetles. The release sites from 2000 and 2001 are now showing beetles and larval damage up to 800 feet away from the original location. The moral of the story: It takes time for the beetle populations to become established and to start putting a dent in the loosestrife population, particularly when small numbers of the beetles are released.

In the last 3 years, the District has been releasing all of their beetles in the same area, with the intent to establish a thriving population there. In 2004, they were seeing evidence of damage from this beetle population ¼ to ½ mile from the release site. They also have enough beetles at this location that they plan to collect beetles from this site (rather than get them from the DNR) to rear in 2005.

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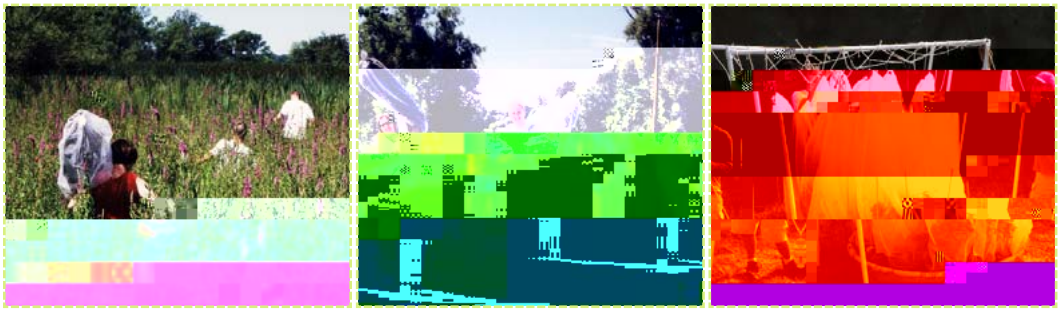
The District has handed over most of its beetle-rearing responsibilities to the Women's Club, though it will still provide support. Hartland Rotary Club efforts are still going strong – they now have a large screen cage that they are using to rear beetles. The Middle School and Rotary Club in Oconomowoc are also still active.

The District is planning to focus on mapping efforts in 2005 to track purple loosestrife populations and beetle damage. They will collaborate with the county, which has GIS mapping software, to plot data collected on the ground onto aerial photographs. They hope that mapping the progress of these control efforts will prove rewarding to all partners involved, as they will see the results of their efforts. These data will be shared with the Purple Loosestrife Bio-control Program and will become part of the statewide database on purple loosestrife and beetles maintained on the internet.

Large-scale purple loosestrife bio-control and beyond – partnerships within a community

Case study details submitted by Dave Burbach and Charlie Marks



DAVE BURBACH

C... : Green Lake Sanitary District: (920) 295-4488

W... ...?

Wetland communities and natural areas around Green Lake were being invaded by purple loosestrife. The state Purple Loosestrife Bio-control Program Coordinator contacted Markesan High School Biology teacher Dave Burbach and encouraged him to get involved in the program. Dave researched the program and began raising and releasing beetles with his students in 1996. In 1997, Charlie Marks of the Green Lake Sanitary District attended a Lake Leaders training. He returned with the idea of starting the Partners with Education program, working with area schools, including Markesan, on environmental issues. In 1998, the partnership between the sanitary district and the school began, resulting in a greatly expanded purple loosestrife biological control effort.

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Markesan High School received support and training from the Purple Loosestrife Bio-control Program Coordinator when starting their bio-control program. Additionally, Dave Burbach researched purple loosestrife biological control and developed his own protocol with step-by-step instructions for how to get started (which has since been shared with many other teachers). His high school students worked to collect purple loosestrife plants, pot them, and put nets around them to raise captive beetles. This was done during the school year. Dave took the plants home in the summer and, when the beetles hatched, he called students to come help with their release.

The Partners with Education program brought together motivated biology teachers from around Big Green Lake, from Ripon, Markesan, Princeton, and Green Lake High Schools and Ripon College. The goal was for the teachers to share what they were working on, plan, and set goals. The role of the Sanitary District was to help support and expand the efforts of these teachers. The District agreed to provide funding and other support for environmental projects aimed at improving and protecting Big Green Lake. The teachers chose to specialize, each pursuing different programs. Markesan High School expanded its biological control program. Additional projects supported by the District at Markesan and the other schools include water quality monitoring, invasive species removal, zebra mussel monitoring, carp exclosures, and shoreline restoration.

Markesan High School and the Sanitary District identified the need to greatly expand their efforts to truly control purple loosestrife around Big Green Lake. They enlisted property owners around

the lake to look for new plants, so that spot treatments could be performed. They also identified larger infestations suitable for biological control. The Sanitary District worked to build a nursery on its property that could house hundreds of purple loosestrife plants, therefore allowing them to produce hundreds of thousands of beetles annually. This mass rearing cage allows the group to raise and release large numbers of beetles for release at heavily infested locations. In the spring, students from the high school and district staff and volunteers team up to dig up plants and transport them to the nursery. They also harvest beetles, adding those to the nursery, as well. When the beetles hatch in the summer, they are then introduced to pre-selected loosestrife-infested sites by staff and students.

C.

The Green Lake Sanitary District has supported this program with a variety of funding sources, including a federal U.S. Fish and Wildlife Service grant and a DNR Lake protection grant (75% cost share). The Sanitary District staff and funds provide the local cost share required. Additional Sanitary District funds are also contributed as needed.

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Project cooperators estimate that they raised and released approximately 300,000 purple-loosestrife-eating beetles annually in 2003 and 2004. All were released within the Green Lake Sanitary District. Additionally, Dave Burbach has helped other communities get their own programs started. Visual inspections of infested sites are showing that the beetles are having major impacts, greatly reducing purple loosestrife populations and allowing native plants to once again compete. Awareness of this and other invasive species is also increasing due to these efforts – Markesan High School and their program has been featured in a number of local news stories, and even a statewide TV program.

Much of the success of this program has been attributed to the dedicated individuals involved. Volunteer involvement and commitment have been very important. Project coordinators have found that by giving volunteers responsibility, support, and guidance, the volunteers in turn have become very committed to the project, making it successful.

The Sanitary District feels confident that they are well on their way to controlling purple loosestrife. There is hope that they may no longer need to raise beetles, at least not at the current levels, after another 3 – 5 years.

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The program will continue with mapping and plans for the 2005 beetle release. Special attention will be paid to the existing populations of beetles and plants in the coming years to determine if the beetle populations are truly self-sustaining and to better understand what happens if purple loosestrife populations begin to rebound.

(Special thanks to Jim Humphrey – lake property volunteer, Jerry Specht – lake property volunteer, and Mark Sesing – DNR Lake Coordinator for their support of this program.)

Purple loosestrife mapping, education, and control efforts at a county-wide level

Case study details submitted by Lori Regni

Contact: Lori Regni, Chair, Langlade County Waterways Association, Inc.: (715) 275-4513

How was it started?

The Langlade County Waterways Association was created in 1999, uniting eight formal lake and stream associations and districts in the county. The purpose was to give a forum to lake users, share information on issues, and to instill the realization that each water body, including the wetlands and the groundwater, is a piece of a whole watershed – the Wolf River watershed, in particular. The most common and high priority issue over the past few years was the spread of purple loosestrife along lakeshores and stream banks, and even to the ornamental gardens of some residents who were transplanting the showy plant because of its beauty and resilience in the severe climate.

How does it work?

The Langlade County Waterways officers recognized that the effort to control purple loosestrife would require vast resources from a variety of sources. In 2002 under the umbrella of the Waterways Association, the Langlade County Purple Loosestrife Task Force was formed. Invited participants included local conser-

of Eurasian water-milfoil. For the third trip, students returned to North and South Twin Lakes, where they conducted water quality monitoring activities.

The students collected plant samples, identified them, and pressed them. They created Eurasian water-milfoil awareness posters to display in Phelps and gave presentations, including one at the NSTLRA annual meeting. They also used a video teleconference with three other schools to further share their findings and information about Eurasian water-milfoil.

Ultimately, Kindergarten, 2nd, 6th, and 7th grade classes as well as some high school students have become involved with the Adopt-A-Lake efforts.

e.

The pontoon boats and other associated materials and support were provided by

Multiple approaches to increase aquatic invasive species awareness/prevention in Vilas County

case study details provided by Carolyn Scholl

CAROLYN SCHOLL

C. . : Vilas County Land and Water Conservation Department: (715) 479-3747

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The Vilas County Land and Water Conservation Department (LWCD) has been involved in aquatic invasive species issues for a number of years. The economy of Vilas County is very dependent on the "Northwoods" vacation and tourism industry, and therefore depends on high-quality lakes that are desirable places for fishing, swimming, and water recreation. Aquatic invasive species have the potential to decrease the recreational value of lakes and the property value of land around them. Vilas County residents have become frustrated and concerned about this issue and the increasing numbers of non-native species to watch out for. The LWCD provides support to these residents and is helping to promote community action to tackle this growing problem.

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The LWCD has provided local support for state programs, helping to train volunteers to identify aquatic plants and distributing DNR invasive species signs for installation at state boat landings. In 2003, the Vilas LWCD created aquatic invasive species kits filled with publications on key species, videos, etc. and placed them in every public library in the county. The kits include handouts for distribution at lake association meetings or other educational opportunities and articles/topics to feature in newsletters. LWCD personnel now direct individuals who call to request information and articles to this resource. The kits are particularly helpful when staff is not able to make it to an event. Local groups still have access to key information.

The LWCD also created packets in 2004 on a variety of lake related resources, including invasive species, water quality, etc. The county was able to secure funding for creation of these packets through a DNR lake planning grant. When meeting with a lake organization, they provide one of these packets to the group. Lake organizations are usually interested in learning more about a variety of lake and lake protection activities, and these packets typically provide more than enough to get them started in the right direction.

In 2003, the LWCD Lake Conservation Specialist began the development of a technical resource guide on aquatic invasive species. The target audience for the publication is lake organizations and the goal is to provide them with a "how to" guide on how to prevent the introduction of non-native species to a lake, or

how to deal with invasives if they have already arrived - “proactive” and “reactive” lake management strategies. The guide is currently under development, and will include information on aquatic invasive species biology and reproductive strategies, treatment options that are currently available (AND legal in the state), how and when to seek a treatment permit from the DNR, information about what to do now to help prevent an infestation, step-specific methodology to deal with an existing infestation, and local contact information for resource professionals who can help with lake management projects. The guide is being designed to have statewide application and will be available for use by LWCDs, other natural resource professionals, and lake organizations statewide.

The largest aquatic invasive species effort that the LWCD is involved with is the Vilas County Aquatic Invasive Species Strategic Planning Project. A DNR representative approached the LWCD and others in Vilas County with the idea of developing a county-level plan to deal with invasive species issues. The LWCD helped coordinate a meeting with state senator Roger Breske and representatives from towns, businesses, chambers of commerce, Vilas County Lake Association, etc. throughout the county. Everyone agreed that the problem is too big for any one entity to solve. The response was positive and it was agreed that different members of the diverse group could accomplish different tasks – for example, towns could pass local ordinances and apply for grant funding while lake associations could work directly with lake property owners on control options and education and outreach. The goal of the project is for all interested parties to work and plan together, rather than the current situation, with individual entities working separately.

The county hired a coordinator in late 2004 to facilitate the planning and implementation of a county-wide strategic plan. This person will work with a committee comprised of a wide range of interest groups – lake organizations, natural resource professionals, businesses, town governments, citizens, tribes, etc.

c.

The LWCD has received grants from the DNR for several of their projects. Lake Planning Grants helped pay for the library kits, the informational folders, and development of the technical resource guide. A multi-year $158,000 DNR Lake Protection Grant is funding the strategic plan project. An in-kind match for these grants is supplied by county staff professional time and local volunteer time.

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The kits and packets have been well received, and there is much demand from citizens in the county for presentations and other information on aquatic invasive species. So, efforts to raise awareness in the county have been successful. There has been some frustration on the part of LWCD staff due to the large demands on their time dealing just with this issue. Also, in many cases, people have heard the message bu(lake 8hotTj T* [(oc

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BCLF wrote a press release in 2003 documenting their activities and working to raise awareness of this issue in their area, highlighting the importance of taking action. The release ran in the Ashland Daily Press around July 4th weekend. They have also continued to make aquatic invasive species a high priority topic at the annual Northwest Wisconsin Lakes Conference. This event, sponsored by the Wisconsin Association of Lakes and the county lake associations from Burnett, Bayfield, Douglas, Sawyer and Washburn counties, draws about 300 people.

c.

BCLF uses funds from their annual Northwest Wisconsin Lakes Conference to help support these efforts, along with contributions from lake associations in the county. In 2004, approximately $500 was spent on aquatic invasive species work.

Thinking Strategically About Invasive Species Prevention and Education

case study details provided by Mike Koles

Contact: Mike Koles, UWEX Waupaca County: (715) 258-6230

What is the issue?

The Waupaca County Chain O'Lakes includes 22 lakes and 800 acres of surface water. The lakes are highly developed and heavily used by non-residents. Recreational use has created an invasive species threat. To date, the lakes have been "invaded" by purple loosestrife and Eurasian water-milfoil (EWM). The realization that the Chain is near many water bodies infested with other invasive species prompted the Chain O'Lakes District to begin researching preventive methods that could be combined with the current EWM control response.

What was done?

The District contacted UW-Extension Community Development Educator Mike Koles as part of their inquiry into preventive methods. Koles teamed with Laura Felda, UW-Extension Volunteer Coordinator for the Invasive Species Program, and DNR staff, to provide a series of educational programs to the District and Association in 2003. The programs led to a decision to apply for a $10,000 Aquatic Invasive Species Grant. Koles worked with a team of District members to write the grant. The application proposed using two major initiatives. First, an Aquatic Invasives Species (AIS) Committee representing local residents, the District, the Association, local businesses, and local government would collaborate to develop a strategic plan to prevent aquatic invasive species on the Chain. Second, during the completion of the plan, certain immediate educational strategies would be implemented.

The purpose of the second objective was two-fold. By implementing certain educational strategies now, the AIS Committee would not only begin to increase peoples' knowledge but also help prevent infestation and exacerbation of invasive species. According to committee Chair, John Hebbring, "we wanted to plan for some extensive prevention and education efforts, but we did not want the 2004 and 2005 boating seasons to pass without some educational strategies being implemented. The two step approach helped us accomplish both." Not only did the second initiative immediately get some education on the ground, the committee felt it would build support for the project and help the collaboration to coalesce by enabling concrete projects to be completed by the "doers" in the group. The grant was subsequently received.

Strategic Planning

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The AIS Committee began the planning process by identifying the vision and mission that would guide their work. They developed the following vision and mission statements:

[illegible]

> "The Chain O'Lakes will be a system in which existing invasive species (purple loosestrife and Eurasian water-milfoil) are effectively controlled and infestation of other invasive species is prevented."

[illegible]

> "Develop an aquatic invasive species plan to control and prevent invasive species on the Chain O'Lakes using functional and educational methods."

According to Hebbring, the mission discussion received a lot of attention. "Everyone agreed that educational methods and functional strategies, such as boat and species monitoring, should be used. However, they could not agree as to whether or not structural methods, namely boat washing stations, should be used." Ultimately, due to space and money constraints, multiple boat landings, and a question regarding effectiveness, they decided against structural methods.

2: G[illegible] D[illegible]

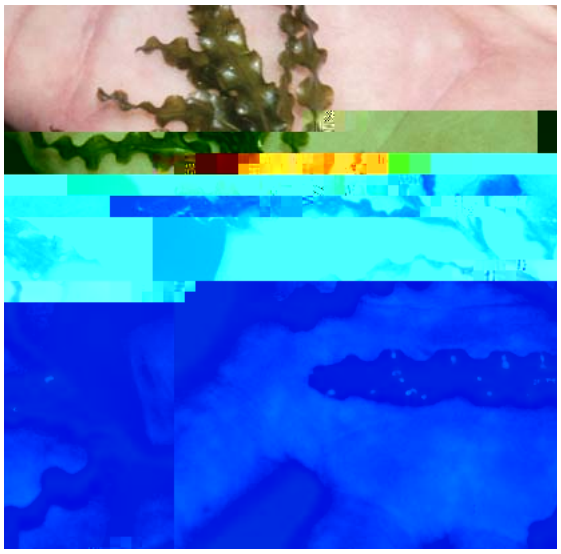
The next step for the AIS Committee was to determine the goals that needed to be achieved to fulfill the mission and vision. The committee began to develop these by answering the question, "What would you like to change, create, or preserve on the Chain"? According to Koles, "This question was purposely broad and resulted in the development of a multitude of goals. One idea behind strategic planning is to realize there are always time and money constraints so you have to try to get the biggest bang for your buck. Ultimately, the committee strategically narrowed the goals down to a reasonable number."

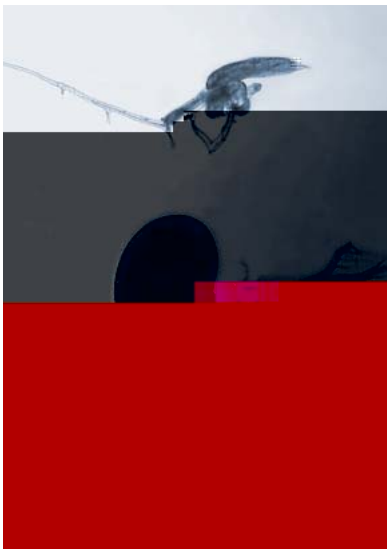
3: [illegible] A[illegible]

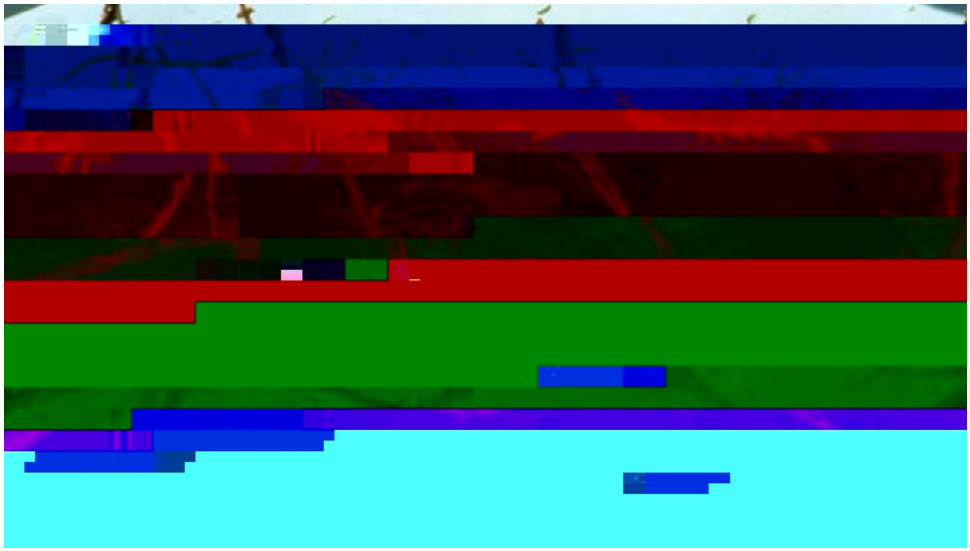
Once the goals were prioritized, the AIS committee identified what would help them achieve the goals and what would prevent them from achieving the goals.

Step 4: Develop Strategies

The next step the AIS Committee took was to develop specific educational and functional strategies. Each strategy identified: A) what needed to be done, B) who was in charge of it, and C) a timeline in which the strategy should be completed.







CHAPTER 6

Statewide Contact list

This information is current as of 2004. Program titles and main office numbers are provided in the event of staff changes.

Statewide Invasive Species Program Contacts:

Aquatic Invasive Species Program Coordinator (DNR) – 608-266-9270 – Ron Martin, ronald.martin@dnr.state.wi.us Coordinates statewide watercraft inspection and monitoring efforts, oversees all contracts with UW-Extension, also tied into policy discussions and development on state, regional, and national levels.

Aquatic Invasives Education Specialist (UWEX/DNR) – 608-267-3531, 268-261-1092 – Mandy Beall, mandy.beall@dnr.state.wi.us Coordinates statewide aquatic invasives education efforts (contact for information on publications, press releases, public service announcements, etc.), also familiar and involved with regional education efforts.

Aquatic Invasives Volunteer Coordinator (UWEX/DNR) – 715-365-2659, 715-346-3366 – Laura Felda-Marquardt, laura.felda@dnr.state.wi.us Coordinates the Clean Boats, Clean Waters volunteer watercraft inspection and monitoring program, and works statewide with DNR and Sea Grant watercraft inspectors. Web site: www.uwsp.edu/cnr/uwexlakes/CBCW

Purple Loosestrife Biological Control Program Coordinator (UWEX/DNR) – 608-221-6349 – Brock Woods, brock.woods@dnr.state.wi.us Coordinates volunteer efforts, research, and education associated with the bio-control program.

Non-indigenous Species Specialist (Sea Grant) – 920-683-4697 – Phil Moy, pmoy@uwc.edu Involved with Great Lakes invasive species and fisheries issues statewide as well as regionally, also involved with statewide aquatic invasive species outreach efforts. Sea Grant main office – 608-262-0905 Contact for general aquatic invasive species and Sea Grant publication information. Web site: www.seagrant.wisc.edu/

Lake Partnership Team Leader (DNR) – 608-261-6423 – Carroll Schaal, carroll.schaal@dnr.state.wi.us Coordinates the statewide lake grant programs, including aquatic invasive species grants.

Invasive Plant Coordinator (DNR) – 608-267-5066 – Kelly Kearns, kearns@dnr.state.wi.us Contact about invasive plants (aquatic and terrestrial), including potential invasive plants of the future.

Local DNR Contacts

Each region has at least one staff person who oversees the regional monitoring and watercraft inspection programs (Regional Aquatic Invasive Species Coordinators); many are also lake coordinators and/or aquatic plant management specialists for their regions. They can be reached by calling the general office numbers below. For more information on applying for an AIS grant, contact your local Lake Coordinator or Environmental Grant Specialist at the same numbers.

Northern Region Rhinelander:	715-365-8900
Northern Region Spooner:	715-635-2101
Northern Region Superior:	715-392-7988
Northeast Region Green Bay:	920-662-5100
South Central Region Fitchburg:	608-275-3266
Southeast Region Waukesha:	262-574-2100
West Central Region Eau Claire:	715-839-3700

For grant application information, grant requirements, etc. visit the DNR Bureau of Community Financial Assistance. dnr.wi.gov/org/caer/cfa/grants

Local UW-Extension Contacts

All of the Extension contacts listed on the previous page work specifically on aquatic invasive species efforts at the statewide level. There are also Extension agents in each county working on a wide variety of issues, and some are involved in invasive species work. Those groups of agents are highlighted below, and the general office number for each county is provided should you want to contact one of your local agents. It is important to note that not all of these agents work on aquatic invasive species issues! So, please don't assume that all will be involved with this issue when you call. If you are not sure who to call, feel free to contact one of the statewide contacts on page 80 – they will try to connect you with someone working on this issue in your area.

Basin Educators for Natural Resources The basin approach to resource management encourages locally-led conservation by involving agency partners, as well as public and private stakeholders in identifying and addressing local natural resource issues. Basin Educators for Natural Resources are a statewide network of educators, whose task it is to encourage local partnerships and provide educational and technical support to stakeholders. These educators help identify and address natural resource issues and priorities particular to the locations and communities they serve. Some basin educators are already

UW-Extension County Office Numbers:

You can also visit the county office web site (www.uwex.edu/ces/cty), from which you can link to each county and view all programs and staff contacts. Or, visit the online Cooperative Extension Staff Directory (at www.uwex.edu/ces/dir), where you can search for staff by name, county, program area, etc.

U.S. Fish and Wildlife Service Efforts of this federal agency include surveillance, control, and monitoring for aquatic invasive species in the Great Lakes and Big Rivers of the region, pri-

Publications

Whenever possible, PDF files of the following publications have been included on the CD that accompanies this handbook. Many are suitable for printing – please feel free to print, copy, and distribute them as you see fit! These publication resources change often, as new products are developed and older ones are phased out. For current publication information, visit dnr.wi.gov/invasives

Watch Cards

These Sea Grant-produced ID cards are distributed throughout the Great Lakes region. Cards obtained from WI Sea Grant, DNR or UW-Extension are customized with Wisconsin-specific contact information. All cards include photos and sketches with identification information, background on the featured species, and information on "what you can do".

ACTUAL SIZE IS 2.5" X 3.5"

Cards can be obtained from a regional DNR service center (see contacts section) or by contacting DNR Central Office, Bureau of Watershed Management: Watershed Publications Coordinator (Kristi Minahan), 608-266-7055, or Aquatic Invasives Education Specialist (Mandy Beall), 608-267-3531, (general Watershed Management office number is 608-267-7694).

Cards can also be obtained from Wisconsin Sea Grant. Single copies can be ordered online at the UW Aquatic Science Center online store: aqua.wisc.edu/publications (click on the Exotic Species sidebar). For multiple copies, contact Sea Grant at 608-263-3259.

Available Watch Cards (and DNR publication numbers):

Bighead and Silver Carp (WT-777)

Eurasian Water-milfoil (WT-745)

European Frogbit (WT-754)* Limited quantities available

Purple Loosestrife (WT-744)

Round Goby (WT-743)

Ruffe (WT-742)

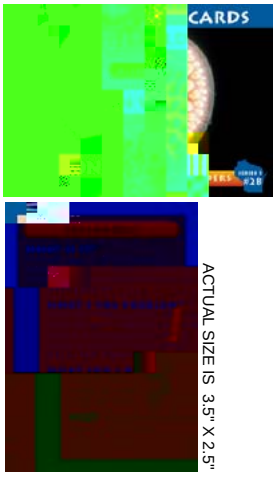
Rusty Crayfish (WT-752)

Spiny and Fishhook Waterfleas (WT-753)

Zebra Mussel (WT-730)

Wisconsin Wild Cards – Aquatic Alien Invaders

These youth-friendly pocket-sized trading cards were created by DNR and UW-Extension. Each card includes information about the featured species, the problems it causes, what you can do, and a "wild" fact.



ACTUAL SIZE IS 3.5" X 2.5"

Cards can be obtained from a regional DNR service center (see contacts section) or by contacting DNR Central Office, Bureau of Watershed Management: Watershed Publications Coordinator (Kristi Minahan), 608-266-7055, or Aquatic Invasives Education Specialist (Mandy Beall), 608-267-3531, (general Watershed Management office number is 608-267-7694).

Available Wildcards (and DNR publication numbers):

Alewife (WT-736)

Curly-leaf Pondweed (WT-759)

Eurasian Water-milfoil (WT-741)

Purple Loosestrife (WT-740)

Rainbow Smelt (WT-757)

Round Goby (WT-734)

Ruffe (WT-733)

Rusty Crayfish (WT-739)

Sea Lamprey (WT-737)

Spiny and Fishhook Waterfleas (WT-760)

Threespine Stickleback (WT-735)

White Perch (WT-758)

Zebra Mussel (WT-738)

Educators can obtain sets of 30 of each card by using the the DNR Education Connection order form, found at: dnr.wi.gov/education/PDF/EducationConnection.pdf

*PDF files of the cards are available on the accompanying CD.

Help Stop Aquatic Hitchhikers Brochure

(DNR publication number WT-801)

ACTUAL SIZE IS 4" X 9"

This brochure was created by Minnesota DNR in cooperation with neighboring states. It is recommended for distribution during watercraft inspections. The brochure includes nationally accepted prevention guidelines for boaters, as well as additional steps for other recreational water users. It also includes photos and a brief description of several aquatic invasive species. Contact information for DNR, UW-Extension, and WI Sea Grant is also included.

This brochure can be obtained from a regional DNR service center (see contacts section) or by contacting DNR Central Office, Bureau of Watershed Management: Watershed Publications Coordinator (Kristi Minahan), 608-266-7055, or Aquatic Invasives Education Specialist (Mandy Beall), 608-267-3531, (general Watershed Management office number is 608-267-7694).

Stop the Invasion of Wisconsin's Waters Poster

(DNR publication number WT-781)

ACTUAL SIZE IS 22" X 28"

This full-color poster features several of the aquatic invasive species of concern in Wisconsin, along with the steps for boaters and anglers to take to prevent their spread. This is suitable for posting in businesses, class rooms, chambers of commerce, etc. The poster can be obtained from a regional DNR service center (see contacts section) or by contacting DNR Central Office, Bureau of Watershed Management: Watershed Publications Coordinator (Kristi Minahan), 608-266-7055, or Aquatic Invasives Education Specialist (Mandy Beall), 608-267-3531, (general Watershed Management office number is 608-267-7694).

*A PDF files of the poster is available on the accompanying CD.

Protect Our Waters Brochure

ACTUAL SIZE IS 3.75" X 8.5"

This Wisconsin Sea Grant brochure includes general information about several aquatic invasive species, as well as the steps that boaters and anglers can take to prevent their spread. It also includes a Stop Aquatic Hitchhikers! sticker that can be removed and applied to a trailer post, etc. (See description of sticker on page 90).

The brochure can be obtained from Wisconsin Sea Grant – single copies can be ordered online at the UW Aquatic Science Center online store: aqua.wisc.edu/publications (click on the Exotic Species sidebar). For multiple copies, contact Sea Grant at 608-263-3259.

The Facts…on Eurasian Water-milfoil Brochure

Purple Loosestrife: A Major Threat to Wisconsin's Wetlands and Waterways Brochure

(DNR publication number WT-799)

New in 2004, this brochure includes information on purple loosestrife, including identification and native look-a-likes, control methods (biological control as well as traditional methods), what you can do to help, and distribution in Wisconsin. It can be obtained from a regional DNR service center (see contacts section) or by contacting DNR Central Office, Bureau of Watershed Management: Watershed Publications Coordinator (Kristi Minahan), 608-266-7055, or Aquatic Invasives Education Specialist (Mandy Beall), 608-267-3531, (general Watershed Management office number is 608-267-7694).

View brochure online at: clean-water.uwex.edu/pubs/purple.pdf

A shortened, black-and-white version of this color brochure, suitable for mass photocopying and distribution, will be available (hard copy and electronic versions) in late 2005.

Purple Loosestrife: What You Should Know, What You Can Do Brochure

(DNR publication number WT-a4,1Oic
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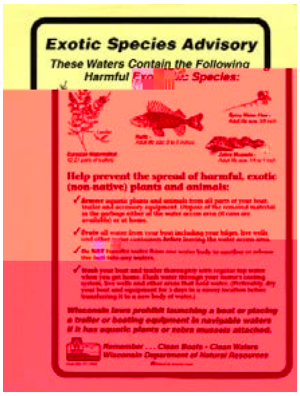
Exotic Species Advisory Fact Sheet

(DNR publication number WR-411)



ACTUAL SIZE IS 8.5" X 11"

This fact sheet is a paper version of the DNR sign posted at landings of infested water bodies. The paper version can be posted on bulletin boards at businesses, etc. and can also be used as a hand out. The fact sheet can be obtained from a regional DNR service center (see contacts section) or by contacting DNR Central Office, Bureau of Watershed Management: Watershed Publications Coordinator (Kristi Minahan), 608-266-7055, or Aquatic Invasives Education Specialist (Mandy Beall), 608-267-3531, (general Watershed Management office number is 608-267-7694).

*A PDF file of this brochure, suitable for printing, is found on the accompanying CD. Also included is a customizable version of this fact sheet, with space for you to add your own logo or sponsorship information.

Stop Aquatic Hitchhikers Sticker

(DNR Publication number WT-747)

ACTUAL SIZE IS 5" X 3.25"

This sticker is part of the Stop Aquatic Hitchhikers! Campaign materials. DNR, Sea Grant, and volunteer watercraft inspectors distribute the sticker to boaters while talking with them about the steps to take to prevent the spread of aquatic invasive species. Boaters are asked to place it on their trailer posts to remind them of these steps each time they move their boats. The stickers can also be placed on tackle boxes and other locations where they can be seen while boating and fishing.

Stickers are available from a regional DNR service center (see contacts section) or by contacting DNR Central Office, Bureau of Watershed Management: Watershed Publications Coordinator (Kristi Minahan), 608-266-7055, or Aquatic Invasives Education Specialist (Mandy Beall), 608-267-3531, (general Watershed Management office number is 608-267-7694).

A PDF file of this sticker (called a tackle box sticker) can be found on the Stop Aquatic Hitchhikers web site (www.protectyourwaters.net). A number of additional campaign materials are also available for you to use, including print "adds" that can be customized with your logo/information. Details about how to become an official partner of the campaign and receive high-quality versions of these files suitable for printing can also be found at the site listed above.

Invasive Aquatic Plants: What every plant enthusiast needs to know Brochure

(DNR publication number WT-765)

ACTUAL SIZE IS 8.5" X 11"

Produced by Illinois/Indiana Sea Grant, this publication includes information for water gardeners as well as plant retailers on aquatic invasive species and the things that these groups can do to prevent their introduction and spread through water gardening. The brochure can be obtained from a regional DNR service center (see contacts section) or by contacting DNR Central Office, Bureau of Watershed Management: Watershed Publications Coordinator (Kristi Minahan), 608-266-7055, or Aquatic Invasives Education Specialist (Mandy Beall), 608-267-3531, (general Watershed Management office number is 608-267-7694).

*A PDF file of this publication is found on the accompanying CD.

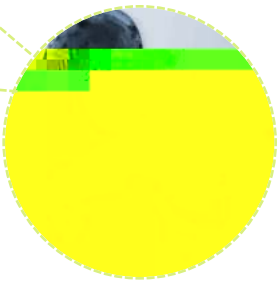
Out of Place: How Aquatic Invasive Species Alter Wisconsin Waterways Magazine Insert

(DNR publication number WT-708)

ACTUAL SIZE IS 8.5" X 11"

This 31-page publication was produced as an insert to the Natural Resources Magazine in 2001. It is useful as a reference, providing background on the invasive species issue in Wisconsin. Limited copies are available from a regional DNR service center (see contacts section) or by contacting DNR Central Office, Bureau of Watershed Management: Watershed Publications Coordinator (Kristi Minahan), 608-266-7055, or Aquatic Invasives Education Specialist (Mandy Beall), 608-267-3531, (general Watershed Management office number is 608-267-7694). *This publication my also be viewed online at: www.nrm.com/supps/2001/jun01/intro.htm

CHAPTER 7



lake associations can expect increased costs to keep boat channels open by mechanical harvesting and costs associated with disposal of rotting vegetation. The City of Sturgeon Bay, Wisconsin spends over $100,000 annually on the control of EWM. Statewide, this plant costs citizens of Wisconsin millions of dollars annually.

How does EWM spread?

EWM plants spread naturally through underground runners, but the most troubling aspect of EWM is its ability to spread through fragmentation. Stem pieces only two inches (5 cm) long can take root and start new colonies when deposited in new waters or in other areas of a lake. The fragments are transported by watercraft or on waves and currents to new areas where they can root and grow. The stems break easily and become tangled on propellers and trailers as a boat is retrieved from the water. If not cleaned off, these fragments can introduce the plant to new waters.

How can I help prevent the spread of EWM?

EWM may become tangled in boat propellers, transducers, trim tabs, bow lines, fishing nets, and on trailers. Actions you take as a responsible boater are critical in preventing the spread of Eurasian water-milfoil to other waters.

* Inspect and remove aquatic plants, animals, and mud from boat, trailer, and equipment before leaving the water access;
* Drain water from boat, motor, bilge, live wells, and bait containers before leaving the water access;
* Dispose of unwanted bait in the trash;
* Spray/rinse boats and recreational equipment with high pressure and/or hot tap water (> 104˚ F), especially if moored for more than a day, OR
* Dry boats and equipment thoroughly for at least 5 days.

What are the laws regarding EWM?

It is unlawful in Wisconsin to:

* Place a boat or trailer with attached aquatic plants or zebra mussels into Wisconsin waters.

What can be done?

Once EWM is well established in a lake, it is nearly impossible to eradicate. It does not cause severe problems in every water body, when it does become problematic, several management options are available. *Most management options require a DNR permit. Before engaging in any aquatic plant management or nuisance control activities, contact your local Aquatic Plant Management Coordinator. For more information, visit:*
www.dnr.wi.gov/org/water/fhp/lakes/aquaplan.htm

Early detection of EWM growth is critical in stopping the plant from becoming a widespread problem. The best chance to halt this non-native invader is when it first appears on the scene. EWM often appears near boat landings and at disturbed sites. New colonies are best removed before they expand. Hand pulling and removal from the water is a simple and effective control method for small areas. Harvesting, raking, or screening the bottom also works well. Milfoil can be effectively treated with selected chemicals early in the summer before plants flower. A permit is required from the DNR for chemical treatment or bottom screening. Whole-lake herbicide treatment is not generally permitted because of the potential to disrupt lake ecosystems by eliminating both invasive and beneficial native plants.

For lakes dominated with beds of milfoil, control efforts must be focused on reducing its spread. Mechanical harvesting can open areas for boating and swimming and cut fish cruising lanes. Harvesting encourages growth of native plants while removing milfoil canopies that limit native plant growth.

Biological control of EWM is still uncertain. A small aquatic weevil (Euhrychiopsis lecontei) feeds on milfoil and actually prefers EWM to our native milfoils. Weevils are found in many Wisconsin lakes. To locate a weevil, look in milfoil stems for signs of damage. There are often small holes or weak spots in the stems that point to weevil damage. These holes allow water to enter the stem, expose the plant to bacterial infection and decrease the plant's buoyancy. The plant will drop lower into the water column and will not canopy out on the surface. Over time, weevils can impact the populations of EWM, but complete eradication is unlikely. Additional research and development is needed before biological control with weevils can be considered an effective management tool.

[illegible]?

- Inspect for and remove aquatic plants, mud, and seeds from boats, trailers, gear, clothing and footwear used in infested areas before moving to un-infested areas.
- Learn to identify purple loosestrife, pull young, small plants wherever found, and report all infestations to the DNR at brock.woods@dnr.state.wi.us, using a form at dnr.wi.gov/org/caer/ce/news/on/3200119.pdf
- Encourage your local highway department to find alternatives to mowing the plant. Mowing usually helps to spread roots and seeds if timed poorly.
- Help curb local use of the plant – discourage local cultivation and distribution.
- Actively work to control purple loosestrife in a wetland near you.
- Teach about purple loosestrife and citizen action using materials found at www.dnr.wi.gov/org/es/science/publications/ss981_2003.htm

[illegible]?

By law, purple loosestrife is a nuisance species in Wisconsin. It is illegal to sell, distribute, or cultivate the plants or seeds, including any cultivars of *lythrum salicaria* (purple loosestrife).

[illegible]

Evaluate each site to choose the best method(s) of control. Factors include site type, level of infestation, resources available, and site goals. Balance short and long term control strategies. Get details from your regional DNR Aquatic Plant Management Coordinator.

[illegible]

These methods offer quick and up to 95% control, but can be disruptive, require follow-up for years to catch missed plants and new seedlings, and be expensive on large areas. Thus, they are often practical only on smaller sites. Some work well in tandem with biocontrol. Minimize site disturbances that expose loosestrife seed, and destroy all removed loosestrife by drying and burning or landfilling, not composting.

- Hand Pulling/Digging A very important prevention method, it is usually done with small numbers of small, young plants, especially in loose, sandy, or gravely soil. Older and larger plants often require extensive digging or break when pulled, leaving the roots to re-sprout, making this method ineffective or even counter-productive.
- Cutting Cutting all loosestrife stem tops on a site eliminates the current year's seed crop, but will have little long-term effect. It is often used in conjunction with establishing biocontrol insects to leave foliage for them. Tops should be cut just as plants are starting to flower.
- Herbicide Application Follow all label instructions and test to find the most effective

Rusty Crayfish

Orconectes rusticus

Rusty crayfish (Orconectes rusticus) are native to streams in the Ohio River Basin states of Ohio, Kentucky, Illinois, Indiana, and Tennessee. They were likely introduced to Wisconsin waters primarily by anglers who used them as live bait. They are still sold as bait (see law below) and by biological supply companies.

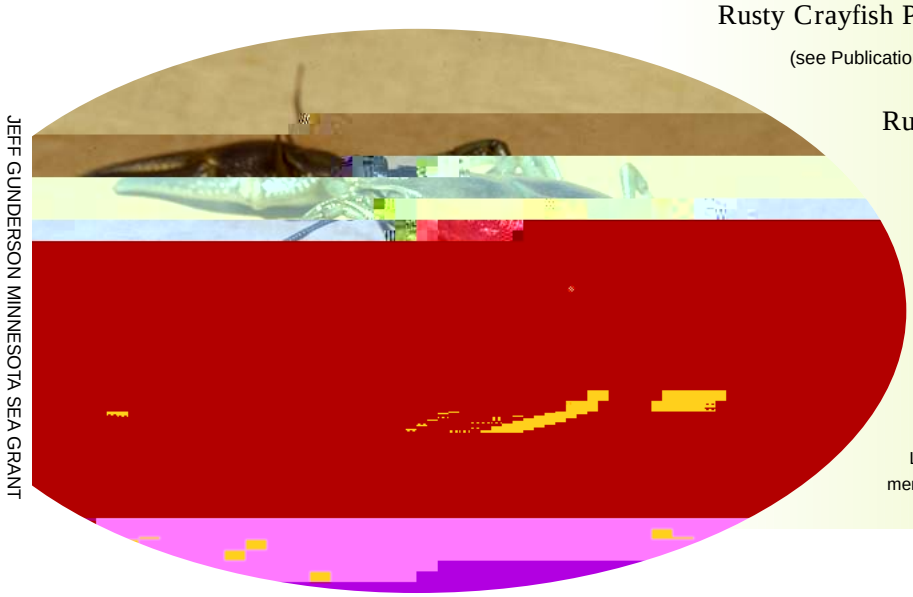
Adults are generally 3-5 inches long (excluding claws). Their claws are typically larger and smoother than many other crayfish. They also tend to have an oval gap when closed. “Rusties” often have characteristic rust-colored spots on their sides. Rusty crayfish are prolific; females lay from 80-575 eggs!

Rusty crayfish eat small fish, insects, and fish eggs. They also eat aquatic vegetation, damaging underwater habitat that is important for fish spawning, cover, and food. They are more aggressive than native crayfish and better able to avoid fish predation, allowing them to displace native crayfish.

It is thought that many populations started with bait bucket releases by anglers. They may also become established if released by aquarium hobbyists or teachers who were keeping them as study specimens.

Do not release live crayfish (or any other plants or animals) into waters of the state. Do not fish with live crayfish. To be safe, always dispose of unused live bait in the trash, not in the water.

It is illegal to possess both live crayfish and angling equipment simultaneously on any inland Wisconsin water (except the Mississippi River). It is also illegal to release crayfish into a water of the state without a permit. A fishing license is required to harvest crayfish.



JEFF GUNDERSON MINNESOTA SEA GRANT

Rusty Crayfish Publications

(see Publications section for more information):

Rusty Crayfish Watch Card
(DNR Publication number WT-752)

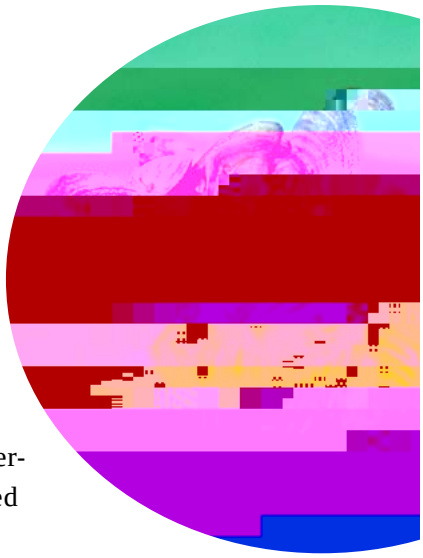
Rusty Crayfish Wild Card
(DNR Publication number WT-739)

Rusty Crayfish: A nasty invader
(fact sheet on CD)

*See accompanying CD for crayfish article from Lake Line, a publication of the North American Lake Management Society.

Zebra Mussels and Quagga Mussels

Dreissena polymorpha and dreissena bugensis



GREAT LAKES SEA GRANT NETWORK

Zebra and quagga mussels are small, rarely exceeding about 1½" in length. Their shells have alternating light and dark stripes from which they get their name. When the flat edges of their shells are placed on a flat surface, quagga mussels will tip over, zebra mussels will not. Both attach to hard surfaces with byssal threads. Quagga mussels are able to survive in deeper water and are even displacing zebra mussels in parts of the Great Lakes. Otherwise, the two species are quite similar - the zebra mussel information included below applies to quaggas, as well.

Like many of our recent invaders, zebra and quagga mussels are native to the Black and Caspian Sea region of Europe.

They came to the United States in the ballast water of ocean-going ships. Zebra mussels were first found in Lake St. Clair in the mid 1980s. In only a few years they spread throughout the Great Lakes and by 1999 had expanded their range all the way to the Gulf of Mexico. Quagga mussels were introduced into the Great Lakes in the early 1990s. (For current Wisconsin distribution information, visit the DNR web site at: dnr.wi.gov/invasives, for current national distribution information, visit USGS web site, nas.er.usgs.gov)

Zebra mussels have a microscopic planktonic larva called a veliger. Veligers are invisible to the naked eye and can float in the water for three weeks to three months depending on water temperature, allowing them to move downstream in currents and to be carried in water transported by boaters and anglers. Zebra mussels can reproduce from spring to late fall and their larvae can be present in the water well into winter. They may also spread as juveniles and adults attached to hard substrate such as plants, boat hulls, motors, anchors or any submerged object.

Unlike our native freshwater mussels that burrow in the sediment (such as barnacles) zebra mussels attach to hard surfaces. This characteristic makes them troublesome for municipal water and power facilities and anyone else who uses lake or river water. As the larval zebra mussel grows it settles and sticks to just about any submerged hard surface. This may include rocks, stumps, boats, weeds, other mussels, motors, piers and the inside of water intake pipes.

Once inside a water intake pipe the mussels can form layer upon layer of living mussels, enough to clog or significantly impede the flow of water in the pipe. Great Lakes water treatment plants and electricity generating plants spend millions of dollars annually to keep their intake pipes clear of zebra mussels.

This same colonizing and clogging ability can also be a problem for boaters if they leave their boat in the water all summer. Zebra mussels colonize water intake grids and sea lockers on boats too. Fire suppression and cooling systems may become inefficient or inoperable once clogged with the mussels. (See article included on the accompanying CD for information on how to protect your boat from zebra mussel damage.)

Eurasian Ruffe

(pronounced like “rough”)

Gymnocephalus cernuus

The ruffe is a small, perch-like fish. Because they are a member of the perch family, ruffe may be mistaken for a young walleye or yellow perch. Here are some ways to tell them apart:

Distinguishing characteristics:

- ✘ Ruffe are small; adults average 4-6 inches in length
- ✘ They have spiny dorsal and anal fins
- ✘ Ruffe have a large dorsal fin; the spiny and soft-ray portions of the fin are joined.
- ✘ There are dark spots between the spiny rays of the dorsal fin
- ✘ Ruffe have no scales on their head
- ✘ When handled, ruffe are quite slimy

Ruffe are fast growing and have a high reproductive capability. They mature in about two or three years. They spawn between mid-April and July depending on water temperature. Females tend to live longer than males, with an average life span of seven years; males live from three to five years. Ruffe grow rapidly and can begin to reproduce at one to two years of age. Females produce up to 200,000 eggs per season allowing rapid population growth.

[illegible]?

It is unlawful in Wisconsin to:

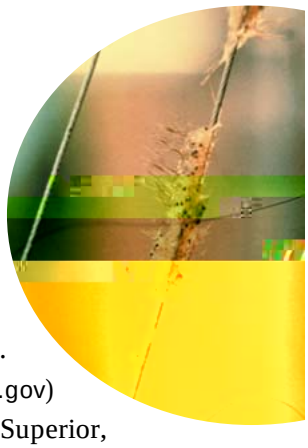
*

Spiny Waterflea

Bythotrephes cederstroemi

Fishhook Waterflea

Cercopagis pengoi



MINNESOTA SEA GRANT

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Both species of waterfleas entered the Great Lakes in ship ballast water from Europe – the spiny waterflea arrived in the 1980s, followed in the 1990s by the fishhook waterflea. One or both species are now found in all of the Great Lakes. (For current regional distribution information, visit USGS web site at: nas.er.usgs.gov) Spiny waterfleas were found in the Gile Flowage, a lake in Iron County near Lake Superior, in September 2003. This is the first time the invasive waterfleas have been found in an inland Wisconsin lake.

Only about ¼ to ½ inches in length, individual waterfleas may go unnoticed. However, both species tend to gather in masses on fishing lines and downrigger cables, so anglers may be the first to discover a new infestation.

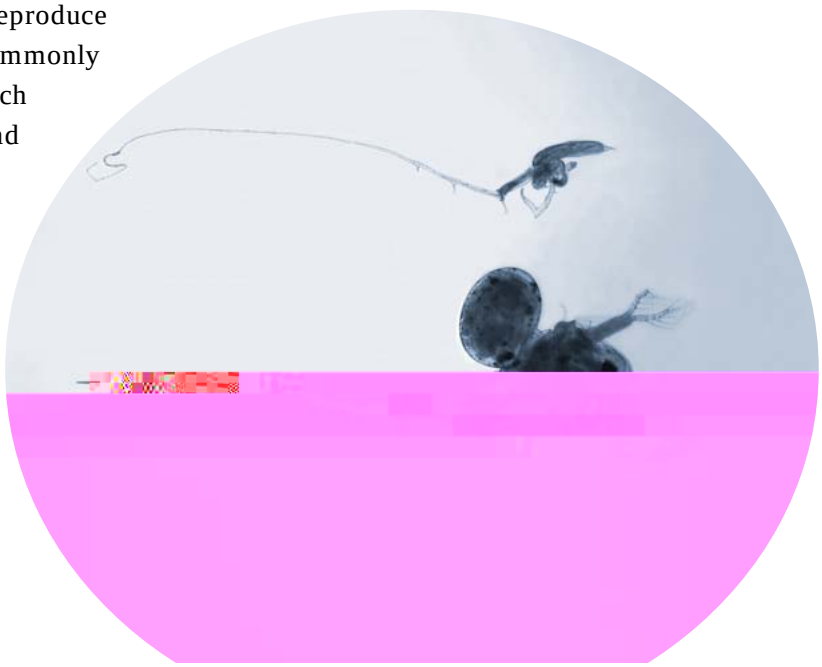
Spiny and fishhook waterfleas are predators – they eat smaller zooplankton (planktonic animals), including Daphnia (native waterfleas). This puts them in direct competition with juvenile fish for food.

W[illegible]?

These tiny predators complete directly with young fish for food. Additionally, young fish have trouble eating them due to their long, spiny tails. Therefore, invasive waterfleas have the potential to disrupt food webs.

The spiny and fishhook waterfleas reproduce rapidly through parthenogenesis, commonly known as asexual reproduction, which means that no males are required and populations can explode in number. Therefore, a single female has the potential to start a new population.

Both waterfleas reproduce asexually in summer and can gather in masses on fishing lines and downrigger cables. These masses can clog the first eyelet of rods, damage a reel's drag system, and prevent fish from being landed.



HANK VANDERPLOEG, NOAA GREAT LAKES

CHAPTER 8

Chapter 2 highlighted the process that led to the development of national guidelines for recreational water users to prevent the spread of aquatic invasive species. Prevention steps for a number of water users are included below, along with web sites where additional information can be found. Boat wash stations are often discussed as a tool for preventing the spread of invasive species, so some guidance/considerations on boat wash stations is also included.

B[illegible]

Prevention steps for boaters and anglers should be as follows (with only minor differences, "wash" instead of "rinse" might be an example):

- Inspect and remove aquatic plants, animals, and mud from boat, trailer, and equipment before leaving the water access;
- Drain water from boat, motor, bilge, live wells, and bait containers before leaving the water access;
- Dispose of unwanted bait in the trash;
- Spray/rinse boats and recreational equipment with high pressure and/or hot tap water (> 104˚ F), especially if moored for more than a day, OR
- Dry boats and equipment thoroughly for at least 5 days.

Additional steps for…

[illegible]:

- Avoid running engine through aquatic plants;
- Run engine for 5-10 seconds on the trailer to blow out excess water and vegetation from internal drive, then turn off engine;
- Remove aquatic plants and animals from water intake grate, steering nozzle, watercraft hull, and trailer.

- Remove aquatic plants and animals from hull, centerboard or bilgeboard wells, rudderpost area, and trailer.

More detail is also available for the steps presented above. While this expanded level of detail isn't recommended for standard outreach materials that go to boaters and anglers – remember keep things simple! – it is helpful for special circumstances. For example, to clean hard-to-treat equipment, like the sampling nets and other materials used by agency staff, the recommendation is:

- Use hot (> 40˚ C or 104˚ F) or salt water to clean your equipment.

The following recipes are recommended for cleaning hard-to-treat equipment that cannot be exposed to hot water:

- Dipping equipment into 100% vinegar for 20 minutes will kill harmful aquatic hitchhiker species.
- A 1% table salt solution for 24 hours can replace the vinegardip. This table provides correct mixtures for the 1% salt solution in water:

Gallons of Water	Cups of Salt
5	⅔
10	1¼
25	3
50	6¼
100	12⅔

- If hot water is not available, spray equipment with high-pressure water.
- Dry equipment. If possible, allow for 5 days of drying time before entering new waters.

In addition to following the prevention steps for boater and anglers presented above, it is recommended that waterfowl hunters:

- Remove aquatic plants, animals, and mud from boat, motor, trailer, waters or hip boots, decoy lines, and anchors (elliptical and bulb-shaped anchors can help reduce snagging aquatic plants);
- Drain water from decoys, boats, motors, etc.;
- Cut cattails or other plants above the waterline when they are used for camouflage or blinds.

SCUBA

In addition to following the prevention steps for boaters and anglers presented above, it is recommended that SCUBA divers:

- Remove aquatic plans, animals and mud from all equipment, including regulators, masks, snorkels, and other dive gear;
- Drain water from buoyancy compensator (bc), regulator, tank book, and other containers;
- Rinse suit and inside of bc with hot water;
- Dry gear, suit, and other equipment thoroughly.

Seaplanes

Seaplanes have the potential to transport aquatic invasive species between waterbodies. The following prevention steps are recommended:

Before take-off:

- Remove aquatic plants and animals (e.g., zebra mussels) from floats, rudders, cables, transom, chine, wheel wells, and step area;
- Pump water from floats;
- Avoid taxiing through heavy growths of aquatic plants;
- Raise and lower rudders several times to free aquatic plants.

After take-off:

- Raise and lower rudders while over waters you are leaving or over land. If plants remain, return to that waterbody to remove.

Regular Maintenance – Use one or more of the following methods:

- Spray floats with high-pressure water;
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If you have acquired undesirable aquatic plant or fish species for your aquarium or water garden, it is important not to release these plants or animals into the environment. While most of these organisms will die, some may be able to survive. And a smaller number of those that do survive have the potential to create negative impacts on our natural environment and our wallets and misperceptions about your hobbies.

So, if you are faced with the situation of having an undesirable species, what can you do? By choosing between several alternatives, you can properly dispose of these unwanted aquatic plants or fish.

- ✻ Educate yourself about your hobby's potential environmental consequences;
- ✻ Adopt these alternatives to release as responsible consumer behaviors:
  - Contact retailer for proper handling advice or for possible returns
  - Give/trade with another aquarist, pond owner, or water gardener
  - Donate to a local aquarium society, school, or aquatic business
  - Seal aquatic plants in plastic bags and dispose in trash
  - Contact veterinarian or pet retailer for guidance about humane disposal of animals
- ❖ Model and promote these behaviors within your peer groups as ways for aquarium hobbyists and water gardeners to show their environmental values;
- ✻ Become involved with policy solutions.

The prevention information listed above is part of the national Habitattitude campaign, sponsored by Sea Grant, the Pet Industry Joint Advisory Council, and the U.S. Fish and Wildlife Service. More details can be found at: www.habitattitude.net

If lake organizations are considering installing and operating a boat wash station, the following is a list of guidelines that should be followed:

- The wash station should be part of an overall watercraft inspection and education program, not simply a substitute for other prevention steps;
- Do not require washing as a condition of launching but rather treat boat washing as a voluntary option to ensure that boaters are doing everything possible to protect the resource;
- Use common sense in designing the facility–do not drain the water back to the lake and compost or put all the waste in the trash;
- Give serious thought to whether the facility should be manned or unmanned, portable or permanent;
- Make sure that a reliable construction firm is in charge of the design, construction and maintenance of the facility;
- Be aware of the safety issues and liability of a wash station and follow all OSHA regulations;
- Seek feedback on boater acceptance of the facility, if possible, to improve statewide understanding of the issue;
- Consider installing a boat washing facility for boaters leaving an infested waterbody to prevent the spread of invasive aquatic species to other waters;
- Stay at least 75 feet back from the lake with the placement of any wash station to avoid conflicts with shoreland zoning regulations;