SPECIAL REPORT

From the Pages of:

WOODLANDS & PRAIRIES MAGAZINE with Mrs. Woods

Japanese Hop

Japanese Knotweed

A TALE OF TWO SPECIES

... and the rising importance of watersheds in their control.

By Rollie Henkes

It hasn't been the best of times nor the worst of times for those fighting Japanese hop and Japanese knotweed, a pair of invasive species with an affinity for waterways and just about any other area where they can sink their roots.

But those on the front lines agree that it is time to get on top of these invaders with more of a group approach.

In what could be a model for fighting invasive species, a citizens group in Wisconsin known as the Friends of the Platte River is taking action against Japanese hop on a watershed

Hop fighters. *Local residents Becky Trewartha and Mark Sethne attack the Japanese hop threatening their river valley.*
Photo: Rollie Henkes

Friends of the Platte River Tackle Japanese Hop

JAPANESE HOP *(Humulus japonicus)* has been used as a tonic in Asian medicine and as an ornamental vine. But if Japanese hop has cured any illnesses or beautified yards, those benefits are being far outweighed by the threat this Asian exotic presents to the health and beauty of ecosystems of North America.

From Maine to Nebraska, those who track invasive species are raising red flags about this plant that has escaped gardens to spread through river corridors, open woodlands, road ditches, pastures or anywhere it can find openings, especially if moist and disturbed.

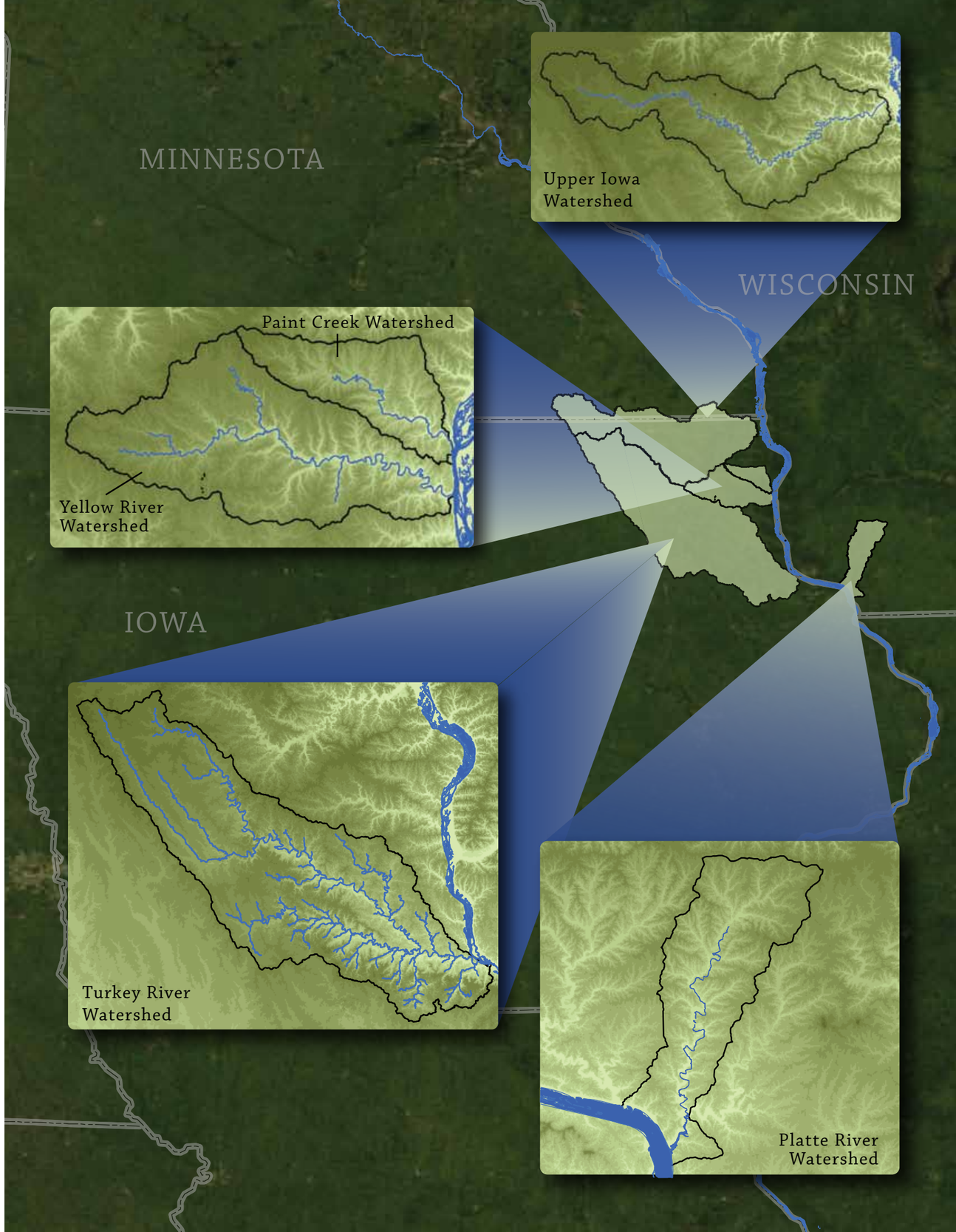
"It doesn't even make good beer," says Mark Sethne, who is involved in a landmark offensive against the weed in the Platte River area of southwestern Wisconsin. More about that later in the story.

Japanese hop's native range includes Japan, China, and other countries in the Far East. The plant's floral parts are known as hops, like those of common hop *(Humulus lupinus)* of beer-making fame, and both species are sources of anti-oxidants and other therapeutic compounds. But Japanese hop is making its biggest mark as a nasty fast-growing annual vine that forms dense mats up to 4-feet thick to smother existing vegetation. If the plant can find something to climb, its stems will reach 10 feet or more, twisting counter-clockwise around trees or other support on prickly, rough-textured stems. It is capable of bringing down small trees. The stems scrape the skin, to make walking through the stuff an unpleasant experience. Though an annual, the persistent plant spreads on the strength of prolific seed production and a fast growth habit that outcompetes other plants.

Its spread in riparian areas along river corridors is of special concern, according to sources. It out competes native vegetation to form dense mats so that nothing grows underneath. The plant's shallow root system opens the way to erosion and sedimentation of the streams. Enjoyment of the streams by canoeists, fisherman, and other *basis. The weed has shown alarming potential to take over stream banks and march on from there, wrapping itself, Kudzu like, around anything in its path.*

Meanwhile, alarm grows over Japanese knotweed on the Iowa side of the Mississippi as the plant spreads through watersheds there. Organized resistance has yet to happen against this aggressive garden escapee; yet it threatens a prized trout stream and has taken over many other sites in both riparian and upland areas.

Like Japanese hop, Japanese knotweed is too tough for piecemeal efforts. The following stories tell how private citizens and public agencies are joining forces to contain these plants on watershed basis or through multi-county initiatives.



users also goes down the drain as the plant takes over the banks.

Pivotal scouting party

In 2009 a group of people slipped into kayaks and canoes and floated down the Little Platte River to scout Japanese hop. They'd been tipped off about the weed, and wanted to see how bad it was. The party included members of the Wisconsin DNR and the River Alliance of Wisconsin, a statewide advocate for the protection and enhancement of rivers.

"The more we looked, the more we found," recalls Laura MacFarland, an invasive species specialist with the River Alliance. "We believe the plant has been in southwestern Wisconsin for a good many years, and then exploded following flooding from heavy spring rains in 2008."

Also in the scouting party were some local residents, including Mark Sethne. He was a member of the Friends of the Platte River, a citizen's group that had organized a few years before to address environmental issues in the Platte River Watershed.

As it turned out, local residents such as Sethne, and technical experts, such as MacFarland, who were in the scouting party that day would later join forces to fight the invader. In 2010 Sethne and the Friends of the Platte River added Japanese hop to its list of issues, and launched a grassroots offensive against the plant, backed up by experts with the DNR, River Alliance, and other agencies. Observers believe the initiative could spark similar partnerships for fighting invasive species in watersheds.

"Local and regional citizen-based groups are critically important to controlling these plants," says Kelly Kearns, Wisconsin DNR invasive species specialist. She sees them as working on both private and public land. Most agencies lack sufficient staff to do the necessary work on public land, Kearns says. Volunteers are needed to fill in.

Clinging vine. *From willows to corn, Japanese hop smothers everything in its path.*

Photos: Becky Trewarta and Rollie Henkes

Kearns adds that the spread of Japanese hop goes well beyond the Little Platte and Platte Rivers. In Wisconsin it has also been found in the Pleasant Valley Creek area and in Pheasant Branch Creek just west of Madison, among other areas. It is also in the Apple River in Illinois; the Root River in Minnesota, and in the Upper Iowa River in Iowa, not to mention a few islands in the Upper Mississippi watershed. It has been growing in riparian areas southern Illinois for at least a dozen years, according to reports. Kearns suspects that Japanese hop is growing along many more streams and rivers, as very little survey work has been done.

Boosted by a grant

The campaign against Japanese hop in the Platte River Watershed got a boost two years ago thanks to a grant from the Wisconsin DNR. It enabled the Friends of the Platte River to hire Becky Trewartha to spearhead the effort.

Trewartha had just graduated from the University of Wisconsin Platteville with a degree in geography and environmental science. Together with the association's board and advisors from the DNR, River Alliance, and UW-Platteville faculty, she mapped out a plan. It began with a map. Trewartha recruited two geography majors at UW Platteville, Abbie Lehman and Nick Flinner, to create the map using the university's global positioning hardware and software. They canoed and walked miles along the Platte and Little Platte Rivers, clicking set points wherever they found Japanese hop. The result is a one-of-a-kind map that not only shows presence of the plant but is color-coded to show the intensity of infestation.

Test plots

But before anyone strapped on a backpack sprayer, Trewartha and her brain trust decided they needed more intelligence. Little, if anything was known about controlling Japanese hop under conditions in the Platte River watershed.

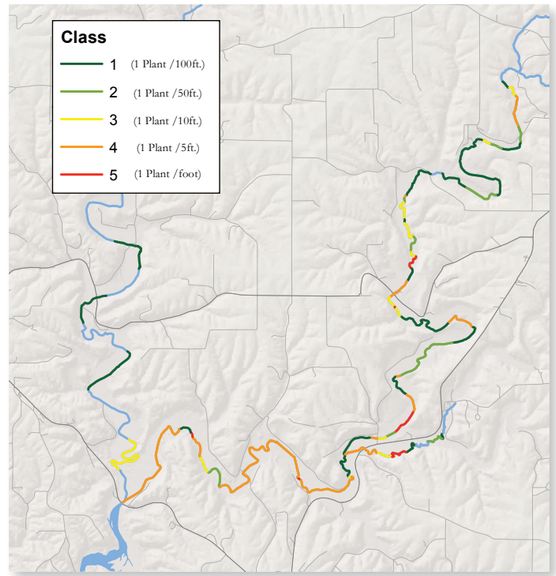
If you're driving on Highway 151 in southwestern Wisconsin, you'll cross a bridge 8 miles south of Platteville. If you look to the east you might see Trewartha's test plots laid out on the flood plain of a creek that runs into the Platte River. She compared three herbicides selected for their safety when used in or near water: an aquatic formulation of glyphosate called Rodeo; Garlon 3a (triclopyr), and Escort (metsulfuran methyl). Rodeo is a non-selective herbicide; Garlon and Escort are broad-leaved weed killers.

Trewartha sprayed the Japanese hop at different stages of growth, replicating the treatments. She also mowed some of the plots with a Weedeater, and laid down a black tarp on others. "I wanted to see if the heat would sterilize the seed to prevent reseeding," she explains. "We understand that the seed remains viable in the soil for up to three years."

One year of mowing didn't phase the hop plants. The tarp killed existing plants, of course, but it didn't kill seed in the soil, and those plots also recovered. As for the herbicides, she found that all of the formulations were fairly effective. She adds, however, that reapplication may be needed. As for timing, she recommends May to July. That gives a chance for a follow-up treatment, if needed, before the plant flowers to produce and spread its seeds between August and September.

Trewartha credits a long list of advisors for technical help. They include the River Alliance's Laura MacFarland and the DNR's Kelly Kearns, Susan Graham, and Courtney Ripp. "With their support and the results of our research, I feel ready to work with local residents on controlling Japanese hop," Trewartha says. "The plant isn't just on public land along the streams. It's busting out to migrate into private lands as well. We've seen it wrapped around corn plants.

"Everyone who lives in the watershed has a stake in seeing that this plant is controlled," Trewartha continues. "The Friends of the Platte River is engaging them in the fight." ■



One-of-a-kind map. *Two students at the University of Wisconsin Platteville mapped Japanese hop along the Platte and Little Platte River, combining global positioning technology with miles of walking and canoeing for ground truth. Colors key the degree of infestation. Map: Abbie Lehman and Nick Finner*

Befriending The Platte River

IT ALL STARTED a few years ago with the sedimentation problem along a stretch of the Platte River. That's when some kayak and canoe enthusiasts got together to see what could be done about it.

Today they are the Friends of the Platte River, a nonprofit organization working on a host of water-quality issues in a watershed covering 350 square miles, nine municipalities, and many miles of rivers and streams coursing

through beautiful and environmentally sensitive blufflands in the Driftless Region.

The organization is also the point of the spear in a grassroots campaign to control Japanese hop, a campaign being closely watched as a model for fighting invasive species on a watershed basis.

"They told us that we couldn't focus on just one part of one river," says Tammy Enz, who lives along the Platte close to where it empties into the Mississippi River in southwestern Wisconsin. "They" were representatives of the River Alliance of Wisconsin, a statewide organization that focuses on water quality issues. "They said we had to understand how the entire river system works," Enz says. "That also meant involving local residents in a watershed approach to improving water quality."

Friends of the Platte River has been active since 2006, and then in 2008 the River Alliance helped the group incorporate as a 501c3 organization, which gave it the credentials to secure financial support and do more things. But then as now it depended on volunteers. A member who was an attorney helped draft the incorporation papers. Enz, who has a background in journalism, wrote grant applications. She also edited a newsletter and launched a Website. The nearby Upper Sugar River Watershed Association also provided guidance.

Instigator. *Water quality issues stirred kayak enthusiast Tammy Enz to help form the Friends of the Platte River. Photo: Rollie Henkes*

Initiatives launched by the Friends of the Platte River include a campaign to encourage residents in the watershed to test their wells. "We wanted them to make the connection between the chemicals they put on their fields and yards to the quality of water in their wells and the rivers," Enz says.

The organization also got word to landowners on the importance of buffer strips between their yards and fields and the streams. Members also worked with several landowners to develop a canoe trail along the Platte River. New canoe launch sites were built and old ones repaired.

Like most community organizers, Enz has dealt with her share of frustrations, not to mention spending the many volunteer hours needed to get the organization off the ground. "The concept of group action on a watershed basis was sometimes hard to get across," she says. "Many of the old-timers felt the stretch they lived on as their personal river and didn't see a need for doing things differently."

But after six years, the Friends of the Platte River has established a track record in the community, and Enz expects good cooperation on its latest crusade---the control of Japanese hop.

"I think it's fortunate that our organization was in place when Japanese hop was recognized as a serious threat to the watershed's ecosystems," Enz says. "I'm sure people in the watershed will want to get rid of this plant once they know what it is and the harm it can do. We have the tools and the organization to help them, while working with the DNR, the River Alliance, and other agencies. Working together, we have a chance to control this invasive plant before it gets completely out of hand." ■

Coming Home To Your Home Rivers

"IT'S SOMETHING that we all know, but tend to forget, and that is: Most people have rivers near where they live. We call them our home rivers."

So says Allison Werner, who works for the River Alliance of Wisconsin, a statewide advocacy group that addresses issues affecting the quality of the water flowing in the state's rivers and streams. She likens rivers to canaries in the coal mine. "The water in our home rivers comes from drainage off the land," she says. "The health of the rivers reflects how we use the land."

Organized in 1993, the River Alliance has tackled statewide issues such as tougher rules against polluted runoff from farms, and the removal of dams to allow rivers to flow more freely. Werner's job is to help local citizens become involved in those and other issues: "To become be a voice for their rivers," says Werner, who focuses on nonprofit organization management.

A lot of it happens with volunteers sitting around the kitchen table. "But you still need a formal organization to give legitimacy and structure for what you want to accomplish," Werner says." That lets you make best use of people with all skills and interests—from those with leadership skills to those who just want to pitch in on work days."

That often means incorporating as a non-profit 501c3 organization, which also has financial advantages. Some grants are only given to 501c3 corporations, Werner points out. Contributions are also tax-deductible for individuals, giving added incentive to pay membership fees and make other donations. "But I don't recommend that a group go for non-profit status right away," she adds. "Give your group a little time to set goals and see what you want to be as an organization."

RIVER ALLIANCE of Wisconsin

Another piece of advice from Werner: Organize on a watershed basis whenever possible. That's what she told Tammy Enz and her friends when they came to her for help in dealing with sedimentation and other problems on the Platte River. "Your issues aren't just about the Platte River," Werner told them. "They concern all of the rivers and streams that share the same drainage—the watershed, in other words. The concept is so important. It's the sum total of all that's running off the land. Everything within the boundaries is interconnected. What one does on the land affects others, including their enjoyment of a river. Everyone has a stake in the issues."

Watershed organizations have caught on in Wisconsin. More than 130 citizen-based environmental advocacy groups are organized around watersheds or river systems. The River Alliance's website carries a directory: http://www.wisconsinrivers.org.

"The organizations are bringing us back to our home rivers," Werner says. ■

In Search of a Plan

Will a watershed threatened by Japanese knotweed spur group action?

Municipal headache. *Street superintendent Jerry Aperans tries to hold off Japanese Knotweed on the outskirts of Lansing, Ia.*

SANDWICHED BETWEEN the Upper Iowa and Yellow River watersheds in northeast Iowa, Paint Creek lays claim to its own watershed, draining nearly 55,000 acres on its way to the Mississippi River.

A more dubious distinction of Paint Creek concerns Japanese knotweed.

Large patches of the plant grow along the lower end of the river, making Paint Creek a focal point of concern about this invasive species. A rapid spreader, it crowds out native vegetation to reduce biodiversity, and because nothing grows underneath, it leaves ditch banks more susceptible to erosion.

Individual patches might be scary, but natural resource workers don't really have a handle on the threat that this stealth bomber of a weed might pose to the region's ecosystems. The weed is not on everyone's radar and it hasn't been systematically studied. Japanese knotweed is easy to find, however, and not just along Paint Creek. Patches have also been found along the Turkey River and in other areas.

Ornamental gone bad

It came into the region years ago as an ornamental under the guise of names such as Japanese bamboo. Spreading by rhizomes, stem

Japanese Knotweed *in Brief*

- Fast-growing perennial reaching heights of 4 to 8 feet.
- Invades temperate-zone riparian ecosystems, roadsides, and disturbed areas.
- Forms dense stands that crowd out other vegetation, degrading native plant and animal habitat.
- Spreads by seed or re-sprouts from vigorous rhizomes that can extend more than 20 feet and penetrate 9 feet deep. Also distributes itself by re-sprouting from rhizome fragments washed downstream.
- The invasive root system can damage concrete foundations, pavement, and other structures.
- Rhizomes can survive winter temperatures of minus 30 F.
- Native to Japan and other Asian countries, where natural enemies keep it in check.
- Introduced into North America in the late 1800s as an ornamental in hedges and for erosion control.
- Distributed in most U.S. states, plus six Canadian Provinces, and is also common in Europe.
- Young shoots can be eaten as a spring vegetable. The roots are used in traditional Chinese and Japanese herbal medicines. The plant is a rich source of resveratrol, an antioxidant used in the manufacturing of nutracueticals.

cuttings, and seed, it has escaped from gardens to invade riparian areas, roadsides, and nearly any disturbed area.

In city limits

Jerry Aperans, who is the Street Department Superintendent in Lansing, Ia., has been treating a big patch of the weed growing in the right-of-way on the west edge of this Mississippi River town. More ominous is a patch found on the grounds of the town marina about 200 yards of the river. Because it threatens a federal waterway Aperans is working with DNR officials to control that infestation. Like many invasive species, Japanese knotweed evades noxious weed laws. Aperans says he can't do anything about a patch growing in a private yard on one of the streets in town.

Taking a stand

Of equal concern is knotweed's ability to spread through river systems. "It's out of control!" exclaims Iowa DNR forester Robert Honeywell, who's taken a stand against the weed in the Yellow River State Forest, which he manages. Paint Creek flows through the forest just before it reaches the Mississippi. A cold-water trout stream, the creek is one of the state forest's ecological gems. But large patches of Japanese knotweed line its banks, blocking access to fisherman and the enjoyment that canoeists and others look forward to along Paint Creek. Then there's the overall threat the plant poses to the forest's biodiversity.

Spraying, not fishing

"It's dog hair thick; impossible to walk through," Tom Brown explained this summer as fired up his motorized back pack sprayer. Brown, a consulting forester based near Decorah, Ia., is one of the land managers hired by Honeywell to treat Japanese knotweed growing along Paint Creek. Brown wore waders, but instead of casting a fly for a trout, he stood in the water reaching up to spray knotweed that towered 12 feet above the water. He was using a tank mix of Rodeo and Habitat. A contact weed killer, Rodeo is a glyphosate formulation for aquatic use; Habitat is a broad-leafed herbicide with imazapyr as the active ingredient. The treatment will yellow and weaken the plants, according to Brown. He would be making a second application in September when the plants are flowering and the most susceptible. You can control it eventually, Brown says, but infestations this massive will take repeated applications.

Honeywell says landowners upstream tend to mow the plant, but that adds to the pieces of stems and rhizomes that float down the river to re-root and spread. He adds that containing the weed along Paint Creek in the state forest will be an uphill battle unless a coordinated control program is implemented upstream.

"We really need to look at a watershed approach to eradication," says Jim Janett, director of the Allamakee County Conservation Board. "We can spend a lot of money and time to control it in our own areas, only to have it come in from elsewhere."

An effort that died

Cathy Henry tried to get such an effort off the ground a few years ago. At the time she was with the U.S. Fish & Wildlife Service working out of McGregor, Ia., as a biologist at the Driftless Area National Wildlife Refuge.

Towering. *Tom Brown reaches up to spray Japanese knotweed along Paint Creek in the Yellow River State Forest.*

She organized an informal group of workers with various government agencies and non-governmental groups with the idea of working together on invasive species. "Japanese knotweed was one of the species we were most concerned about because of its ability to spread through riparian areas," Henry says. "You can't just treat spots here and there and hope to control it. I felt we needed to engage private landowners and public land managers in a cooperative effort."

Henry envisioned forming a cooperative weed management area modelled after similar programs in some western states. It would map locations of species of most concern; inform the public about their threats, and develop area control programs. (See story on next page for more on cooperative weed management areas).

Lora Friest, executive director of the Northeast Iowa RC&D, wrote a proposal for a federal grant to establish just such an entity, to be known as the Northeast Iowa Cooperative Weed Management Area. Target species included Japanese knotweed, garlic mustard, bush honeysuckle, reed canary grass, and purple loosestrife. The proposed management area covered 10 counties, and to meet its objectives it would pool the resources of agencies such as U.S. Fish & Wildlife, the Department of Interior, county conservation boards, Iowa DNR, Soil & Water Conservation Districts, NRCS, , non governmental agencies such as the Iowa Natural Heritage Foundation, and private natural resource workers. The proposal also asked for funds to hire an invasive species outreach specialist.

The grant proposal was turned down, however. The initiative took another blow when Henry, its major champion, left northeast Iowa to become manager of the Port Louisa National Wildlife Refuge farther down the Mississippi River. Without grant money or a strong leader, the effort gradually petered out. Workers with U.S. Fish & Wildlife, Effigy Mounds National Monument, and other agencies tried to follow through on what Henry started, but other priorities got in the way.

Another try

Natural resource workers in northeast Iowa haven't given up. This fall, Friest submitted new grant proposals. Scaled back from establishing a 10-county weed management area, the new proposals target Japanese knotweed on private land along Paint Creek upstream from Robert Honeywell's offensive in the Yellow State Forest. If funded, the proposals would provide a person to help private landowners control the weed along Paint Creek and raise awareness of the environmental threat it poses. Cost-share funds might also be available to assist landowners.

Another resource

Watershed organizations could also pitch in on the fight against Japanese knotweed, according to Brad Crawford. He's the Turkey River Watershed coordinator at the Northeast Iowa RC&D. Through a new group called the Turkey River Watershed Alliance, Crawford works with more than 20 government agencies and non-profits with a stake in the health of the waters and land in the Turkey River Watershed. This summer he was helping to monitor water quality by collecting water samples at 50 sites from streams in the watershed. Test results will guide land management practices in riparian areas.

Japanese knotweed also needs to be monitored in the watershed, Crawford says, and he believes it would be a good project for the Alliance. "To guide further action and gain support, we need a baseline on the extent of knotweed and its environmental impact in the Turkey River Watershed," he says.

Meanwhile, Japanese knotweed continues to spread. "The time to get it is when there are only small pockets here and there," says the Iowa DNR's Honeywell. "When you have an entire ditch bank filled with the stuff, control becomes extremely difficult and expensive." ■

Sticking It to Japanese Knotweed

AT LEAST THERE'S ONE GOOD THING about the hollow stems of Japanese knotweed. They've made possible a herbicide applicator with a needle at the business end that lets you deliver a surgical strike against the weed.

JK International of Battle Ground, Wash., developed the applicator, called the JK Injection Tool.

Point blank. *JK Injection Tool lets Richard Kittelson deliver a fatal blow to Japanese knotweed. Photo: Brad Crawford*

"We've found the tool to be very effective, though labor intensive," says Richard Kittelson, a forester with the Northeast Iowa RC&D who's used it on Japanese knotweed in the Yellow River State Forest. He believes the tool would be useful on small infestations or treating regrowth or skips from sprayer applications.

Curtis Lundy, a nearby landowner, borrowed the JK Injection Tool from Kittelson in the fall of 2010 and used it to treat a patch of knotweed growing on his land along Hickory Creek near where it flows into the Yellow River. The results were so good that he bought his own JK Injection Tool for $250 and used it the next year, injecting a glyphosate formulation just above the first node. Lundy sprayed plants with stalks too flimsy to be injected and where plants growing down a bank of the Yellow River were too hard to reach with the tool.

He reports nearly 100 percent control with the Injection Tool. "It's not the easiest job," Lundy admits. "You're mostly working on your knees in a bamboo forest. But the near-complete kill merits the extra work. You don't waste expensive herbicide, and you're not killing other plants or letting herbicide enter the environment. If a few people formed a posse with these tools, we could do real damage to Japanese knotweed populations in the Yellow River Valley," Lundy says.

Glyphosate formulations are the herbicides of choice for the JK Injection Tool. Companies such as Monsanto and Dow have developed labels that give recommended rates for hollow stem injection.

Some trials show that injecting the herbicide in late summer or early fall below the first two nodes above the root crown produces the best results. However, users in New Jersey have had success injecting herbicide in the stem from 2 to 6 feet from the ground, and treating almost any time of year from early spring until after frost. Some users recommend pre-drilling holes with a small hand drill for easier penetration. This also releases stem pressure to prevent blowback. ■

Counter balance. *The psyllid species, Aphalara itadori , awaits approval as biocontrol agent against Japanese knotweed.*

A Biocontrol for Japanese Knotweed

A TINY SAP-SUCKING INSECT that feeds only Japanese knotweed has been released as a biocontrol agent in Great Britain, and it is being evaluated in the U.S.

The aphid-like insect is Aphalara itadori, one of the hundreds of species of psyllids. They occur worldwide, feeding on many plants including crops such as apples and tomatoes. But psyllid species tend to be host-specific, completing their life cycle on only one plant species, which makes them useful biocontrol agents.

A. itadori survives and feeds only on Japanese knotweed, according to research in Great Britain and elsewhere. The first releases began in 2010 in Great Britain, where Japanese knotweed causes considerable damage, even pushing its way through foundations and floors of buildings.

A itadori has also been tested in the U.S. for its specificity on Japanese knotweed. The findings are being reviewed by a technical advisory group, reports Fritzi Grevstad, a biological scientist at Oregon State University. Approval for releases depends on a favorable report from that group, followed by clearance by the Agricultural Plant Health Inspection Service (APHIS) of the USDA. ■

Cooperative Weed Management Areas Gang up on Invasive Species

Balanced attack. *Oregon weed fighters marshaled forces against yellow star thistle by forming a cooperative weed management area.*

Photo: Brother Alfred Brousseau, St. Mary's College of California

IN 1994 local interests in northeast Oregon put up a united front against invasive species. They formed the Tri-County Cooperative Weed Management Area.

Targets included yellow star thistle and rush skeleton weed.

Hopefully those weeds haven't spread. But the organization has. Pioneered in western states, cooperative weed management areas, or CWMAs, are popping up from coast to coast like, well, weeds. They're being formed by coalitions of government agencies, private landowners, and other citizens and organizations as an alternative to piecemeal efforts that stamp out invasive species in one area only to have them come in from another.

Says the National Network of Invasive Plant Centers: "Locally-driven CWMAs are especially effective at generating public interest in weed management and in organizing community groups to support on-the-ground programs."

They also create a political constituency to attract financial support through competitive grants and other funding.

Some CWMAs are informal groups of people working together on issues in their region. Others are more structured, with bylaws and boards of directors. Formal or informal, the organizations are sharing resources---equipment, time and labor---to control weed populations across boundaries. They number several hundred across the U.S. and are growing. Wisconsin, for instance, had 14 CWMAs at last count; Minnesota 24.

Some CWMAs are coalitions of government agencies and other organizations. The Hawkeye Cooperative Weed Management Area, which covers six counties in eastern Iowa, was formed through a memorandum of understanding signed by four county conservation boards, two county highway departments, an RC&D, an area DNR office, and the U.S. Army Corps of Engineers. Its mission statement says in part: "To pool the knowledge and resources that will help achieve better control of weeds while improving working relationships with the partners and members of the public."

Other CWMAs are 501c3 nonprofit membership organizations, such as the Southeastern Wisconsin Invasive Species Consortium. Fighting invasive species in an eight-county area, it works with a host of government agencies, plus land trusts and other nonprofits, along with landowners and other citizens. This summer the CWMA fielded more than 150 volunteers to cruise roadsides to spot and map invasive species for further action. They found wild parsnip, Japanese knotweed, and teasel, among other invaders. "Once you start looking for them, you realize how damaging they can be," said volunteer Barbara Holtz, quoted the *Milwaukee Journal Sentinel.* ■

National Network of Invasive Plant Centers.
http://invasiveplantcenters.org/cwmas.html
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