

Aquatic Nuisance Species of the Mississippi River Basin

Presented by
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MICRA's member states have long been concerned about the spread of exotic species. This issue was important enough to the states that they included the "*Development of protocols, policies and regulations for disease control, introduction of exotics, maintenance of genetic integrity, and maintenance and enhancement of indigenous species*" as one of MICRA's primary goals.

This action lead MICRA to establish an Exotic Species Committee in 1996, but because the subject of exotics and stocking is so sensitive to some states, the committee ran into some difficulties over an early committee survey, and the committee has been inactive ever since.

MICRA renamed the committee, the Aquatic Nuisance Species Committee, in 1997, and Chairman Marion Conover has been actively seeking a ChairPerson for the past year. Also, as part of MICRA's interest in getting the Committee going, we co-sponsored today's symposium with the Ohio Division of Wildlife.

Then in August of this year Chairman Conover and Gary Isbell, Fish Chief of the Ohio Department of Natural Resources, sent out a questionnaire to the fish chiefs of the 28 MICRA member states requesting *a listing of aquatic nuisance species present in each state, an estimate of the magnitude of the infestation, and its current distribution*. Respondents were asked to send their separate state listings to my office for compilation. Those responses are the subject of my presentation here today.

MICRA's interest here is in providing some insight into the magnitude of the aquatic nuisance species problem in the Basin, and its potential for spread. It's important, however, to note that what I have to say here today must be put into its proper perspective. It should in no way be considered a definitive work, but instead what it is: a brief, cursory summary of available information on the subject.

A total of 26 of MICRA's 28 member states responded to the survey. The non-responding states (Wisconsin and Wyoming) felt we were duplicating efforts of an existing Aquatic Nuisance Species Task Force Regional Panel, and the other simply didn't have the staff or the time to do the work. On the other hand, some of the responding states took great care in listing their species, while it was obvious that some of the others just didn't have the staff to provide more than a cursory listing, so there is some imbalance in these data.

Further complicating the issue, some states went so far as to list all species ever introduced into their state as an aquatic nuisance species, even though they continue to stock them. Apparently, there is some confusion regarding definitions of the terms "*aquatic nuisance species*" and "*non-indigenous species*". Those states

reporting high numbers, in one case, included an extensive listing of plant species, most of which exhibited only minor localized infestations. While another state included a listing of every fish species ever introduced into the state. So because of the possible misinterpretation over definitions, we need further discussions in this area.

Of the 163 species reported, 62 were plant species, 16 were invertebrates, 83 were fish, and one each were amphibians and mammals. Interestingly, the bull frog reported by Colorado “poses a threat to native anurans (in that state) and preys on several other species of native wildlife”. The bull frog occurs in Colorado at elevations below 8,000 ft. as well as in some hot springs above that elevation. The nutria, the only mammalian aquatic nuisance species listed, of course, is widely known for the extensive problems it has caused for Louisiana wetlands. And Louisiana has gone to great lengths to control this species, including a promotional campaign and development of recipes in hopes that it could become a human consumer item.

Most of the plants species were listed by Texas and Alabama. Several of those were imported ornamental species. Interestingly, however, the American lotus, which was listed by Alabama as a nuisance species, is considered a threatened and endangered species in at least one of MICRA’s northern states. So here is an example of one states’ trash species being another state’s treasure.

The one plant species listed by the most states (13) was the purple loosestrife. I think we’re all well aware of the threat that this species has been and continues to be to our wetlands.

The Eurasian watermilfoil was a close second, with 11 states reporting it as a problem. It is, of course, very familiar to all of us as a species guilty of clogging our lakes and waterways.

The Asiatic clam was the most listed mollusk species, being reported by 14 states. This species has, of course, long been a problem, clogging water intakes of power plants and industry.

It’s more notorious cousin, the Zebra mussel was the second most listed mollusk, being reported by 12 states. The distribution of this species closely follows the path of the intercontinental waterway, clearly reflecting the role that commercial navigation traffic has played in spreading this harmful species from the ballast water of Great Lakes ships to our inland waterways by way of it’s attachment to barges.

The round goby, a small sculpin like fish, is undergoing a dramatic population increase in the Great Lakes, and may follow the path of the zebra mussel, reaching the Basin through the interconnecting channels between Lake Michigan and the Illinois River. Unlike the zebra mussel, however, the round goby cannot hitch on ride on towboats by attaching itself to barges. The goby is noted as a bait robber by sport fishermen in the Great Lakes, and one unconfirmed siting in the Ohio River reported to West Virginia biologists by a fisherman, is reason for alarm that it may be spreading to interior waters. Like the zebra mussel, the species gained access to the Great Lakes through release of ballast water by ocean-going ships. A further threat may exist for it’s spread beyond the Great Lakes by way of the commercial bait industry.

Not surprisingly, the common carp was the most listed fish species. However, while being listed by only 15 of the responding states, it can be considered to be present throughout the Basin. Some states simply didn’t list it because it is now considered a part of their natural fish fauna.

The Asian carps were the second most reported fish species. The grass carp listed by 12 states, seems to be accepted by most states in it’s sterile form, and continues to be stocked in many states for vegetation control, including many of those who also listed it as a nuisance. Concern for expanding populations of bighead carp is clearly on the rise. This Asian species was also listed by 12 states. It appears to be very prolific and competes with our native buffalofish. State concern about the spread of this species has lead to the development of a cooperative, interstate bighead carp research proposal which will be discussed at MICRA’s winter

meeting to be held here at the Hyatt Regency on Tuesday afternoon and Wednesday morning. The silver carp, reported by 7 states, appears to be following in the footsteps of the bighead carp, not to mention a third species, the black carp, not reported in this survey, but that is thought to be present in the Basin. All of these Asian carps have been brought into this country by the aquaculture industry, and clearly action needs to be taken to address this ongoing problem. There is probably a need for stepped up regulation of this industry.

Perhaps the most interesting and threatening new species could be the blueback herring, recently reported in the Tennessee River in both Georgia and Tennessee, as well as at another site in Texas. Whole year classes of bass are reported missing from some mainstream Tennessee River reservoirs, and competition with this species is thought to be a possible cause. It is thought that this species was also introduced by the bait industry, making it another target of possible stepped up regulation.

A final fish species listed by a large number states was the Rudd. This European species was listed by 9 states, mostly in the western part of the basin. It was also probably introduced by the aquaculture industry.

The complete listing of fish species, as noted earlier, includes many species that continue to be stocked by the states. Clearly communication is needed with and between the states not only on the definition of aquatic nuisance species, but also on the level of coordination, communication, and influence between states that is desirable to regulate state and federal fish stocking programs. The latter issue, spanning concerns related to both aquatic nuisance species and fish genetics, definitely deserves further discussions between MICRA member states.

A second questionnaire was sent out of my office by email in late October, asking the states if they were developing state aquatic nuisance species plans or if they had any interested in developing a basinwide plan. Interestingly, this question generated responses from a different set of states. Wisconsin and Wyoming replied to this questionnaire, while Nebraska, Oklahoma, Minnesota, Louisiana, Alabama, West Virginia, Pennsylvania, and New York joined Mississippi, Tennessee, Indiana, and Montana in remaining silent on the issue. Of the responding states, Kansas, Texas, Iowa, Illinois, Wisconsin, and Ohio are in the process of preparing state aquatic nuisance species plans, while Wyoming and Colorado are involved in developing a Western Regional plan. Of the responding states, only Kentucky said they had no interest in developing a basinwide plan, Illinois and Wyoming remained silent on that question. Reluctance to developing a basinwide plan seemed to center on the lack of manpower and resources available, coupled with the lack of enforceability once a plan is developed. No one was interested in developing a plan for the sake of a plan. I think across the board these days, every state and federal resource agency is extremely limited in funding and manpower resources.

In concluding, I think it's clear that MICRA could and should take several actions to further it's exotic species goal:

- the Aquatic Nuisance Species Committee should be activated as soon as possible.
- One of the states should step forward to Chair the Committee, or MICRA should request assistance from one of the it's Entity members, to fill this important position.
- Once reactivated, the Committee should develop a comprehensive list of Mississippi River Basin aquatic nuisance species that all can agree to.
- Discussions should also begin on the issue of stocking and reintroductions, and attempts made to initiate the debates necessary to reach consensus on a basinwide fish stocking policy.
- The states should also get more aggressive about developing and enforcing interjurisdictional

regulations to place stricter controls on the aquaculture, bait, and aquarium fish industries.

- The states should lobby to enhance regulations and controls on the maritime industry, especially related to ballast water releases — both foreign and domestic issues should be addressed here.

- The states should lobby to enhance federal regulations where necessary to support or bridge state enforcement actions.

- MICRA's Aquatic Nuisance Species Committee should also become an active participant in the activities of the National Aquatic Nuisance Species Task Force.

- If deemed appropriate by the member states, a MICRA Aquatic Nuisance Species Basinwide Plan should be developed.

With that I will conclude and attempt to answer any questions that you might have.

Thanks very much.

Table 1. Aquatic Nuisance Species of the Mississippi River Basin listed by state, with notations of status and distribution.

<u>State</u>	<u>Category</u>	<u>Common Name</u>	<u>Status*</u>	<u>Distribution</u>
<u>Alabama</u>	Plants	Hydrilla	d/wd	Mobile/Tombigbee/Tennessee rivers
		Eurasian watermilfoil	d/wd	Mobile/Alabama/Tennessee rivers
		Brittle naiad	d/wd	Alabama/Tennessee rivers
		Southern naiad	wd	Tennessee River
		Egeria	d	Mobile River
		Floating water hyacinth	d/wd	Mobile/Tombigbee/Black Warrior rivers
		<i>Scirpus cubensis</i>	wd	Mobile River
		Alligator weed	d/wd	Mobile/Tombigbee/Black Warrior/ Alabama rivers
		Uruguay seedbox	d	Black Warrior River
		American lotus	d/wd	Mobile/Tombigbee/Alabama/ Tennessee rivers
	Giant cutgrass	d/wd	Mobile/Tombigbee/Black Warrior/ Alabama/Tennessee rivers	
	<i>Lyngbya spp.</i>	d	Tombigbee River	
	Invertebrates	Asiatic clam	d	Tennessee River
		Zebra mussel	wd	Mobile/Tombigbee/Black Warrior/ Alabama/Tennessee rivers
	Fish	Grass carp	d	Mobile/Tombigbee/Black Warrior/ Alabama/Tennessee rivers
		Common carp	wd	Mobile/Tombigbee/Black Warrior/ Alabama/Tennessee rivers
Bighead carp		r/u	central part of state	
Silver carp		r/u	central part of state	
<u>Arkansas</u>	Invertebrates	Zebra mussel	wd	Arkansas/White rivers
		Asiatic clam	wd	Statewide
	Fish	Common carp	wd	Statewide
		Grass carp	wd	Scattered locations across the state
		Silver carp	d	Arkansas River
		Bighead carp	d	Arkansas River
		Rudd	d	Spring River
<u>Colorado</u>	Invertebrates	Asiatic clam	d	metropolitan waters
		Big-ear radix	d	Unknown
		Gray field slug	d	Unknown
	Amphibians Fish	Bull frog	wd	Statewide below 8,000 ft. msl
		Brown trout	s/?	Arkansas/Republican/South Platte/ North Platte rivers
		Brook trout	s/?	Arkansas/South Platte/North Platte rivers
		Rainbow trout	s/?	Arkansas/Republican/South Platte/ North Platte rivers
		Lake trout	s/?	Arkansas/South Platte/North Platte rivers
		Golden trout	s/?	South/North Platte rivers
		Snake River cutthroat trout	s/?	Arkansas/South Platte/North Platte rivers
		Yellowstone cutthroat trout	s/?	Arkansas/South Platte/North Platte rivers
		Kokanee salmon	s/?	Arkansas/South Platte/North Platte rivers
		Arctic grayling	s/?	Arkansas/South Platte/North Platte rivers
		Cutthroat x Rainbow trout	s/?	Arkansas/South Platte/North Platte rivers
		Pikes Peak Cutthroat trout	s/?	Arkansas River
		Tiger trout	s/?	Arkansas River
		Splake	s/?	Arkansas/South Platte River
Largemouth bass	s/?	Arkansas/Republican/South Platte rivers		

Smallmouth bass	s/?	Arkansas/Republican/South Platte rivers
Spotted bass	s/?	Arkansas River
Bluegill	s/?	Arkansas/Republican/South Platte rivers
Pumpkinseed	s/?	Arkansas/Republican/South Platte rivers
Redear sunfish	s/?	Arkansas/Republican/South Platte rivers
Black crappie	s/?	Arkansas/Republican/South Platte rivers
White crappie	s/?	Arkansas/South Platte rivers
Sacramento perch	s/?	South Platte River
Hybrid sunfish	s/?	Arkansas/Republican/South Platte rivers
Goldfish	s/?	Arkansas/Republican/South Platte rivers
Tench	s/?	Arkansas/South Platte rivers
Common carp	s/?	Arkansas/Republican/South Platte rivers
Grass carp	s/?	Arkansas/Republican/South Platte/ North Platte rivers
Golden shiner	s/?	Arkansas/South Platte rivers
Spottail shiner	s/?	South Platte River
Rudd	s/?	Arkansas/South Platte rivers
Brook silverside	s/?	South Platte River
Brown bullhead	s/?	South Platte River
Blue catfish	s/?	Arkansas/South Platte rivers
Flathead catfish	s/?	Arkansas/South Platte rivers
White bass	s/?	Arkansas/Republican/South Platte rivers
Striped bass	s/?	Arkansas/South Platte rivers
Palmetto bass	s/?	Arkansas/Republican/South Platte rivers
Sunshine bass	s/?	Arkansas/Republican/South Platte rivers
Northern pike	s/?	Arkansas/South Platte rivers
Muskellunge	s/?	South Platte River
Tiger Muskie	s/?	Arkansas/South Platte/North Platte rivers
Yellow perch	s/?	Arkansas/Republican/South Platte rivers
Walleye	s/?	Arkansas/Republican/South Platte/ North Platte rivers
Saugeye	s/?	Arkansas River
Threadfin shad	s/?	South Platte River
Mosquitofish	s/?	Arkansas/South Platte rivers
Ninespine stickleback	s/?	South Platte River
Rainbow smelt	s/?	South Platte River
Freshwater drum	s/?	Arkansas/Republican/South Platte rivers
Southern platyfish	s/?	South Platte rivers

Georgia

Fish

Blueback herring d Tennessee River system

Illinois

Plants

Water cress wd statewide

Eurasian watermilfoil wd statewide

Purple loosestrife d Northeastern marshes

Invertebrates

Spiny water flea d Lake Springfield/Illinois River

Zebra mussel wd navigable rivers/adjacent waters

Fish

Round goby d Lake Michigan/connecting waters

Common carp wd statewide

Goldfish wd statewide

Carp x Goldfish hybrids wd major rivers

Grass carp wd/d larger rivers

Bighead carp wd/d larger rivers

Silver carp r lower Mississippi River

White perch d major rivers

<u>Indiana</u>	Plants	Purple loosestrife	wd	statewide
		Eurasian watermilfoil	wd	lakes and rivers
		curlyleaf pondweed	wd	lakes and rivers
		phragmites	wd	wetlands across northern counties
	Invertebrates	Zebra mussel	wd	Northern lakes/Ohio River/ a few other rivers
		Asiatic clam	wd	statewide
	Fish	Common carp	wd	statewide
		Silver carp	wd	big rivers
		Bighead carp	wd	big rivers
		Gizzard shad	wd	statewide
Goldfish		wd	statewide	
Diploid grass carp		u	statewide	
<u>Iowa</u>	Plants	Eurasian Watermilfoil	d	scattered stands statewide
		Purple loosestrife	wd	statewide
		Bog bullrush	u	u
		Curly-leaf pondweed	wd	northern part of statewide
		Yellow flag iris	u	u
		European pepperwort	u	u
		Water cress	u	u
		Creeping yellow cress	u	u
	Invertebrates	Zebra mussel	wd	Mississippi River
		Rusty crayfish	u	u
	Fish	Bighead carp	d	large river drainages
		Common carp	wd	statewide
		Grass carp	d	statewide
	<u>Kansas</u>	Plants	Purple loosestrife	d
Western saltcedar			wd	Arkansas and Cimarron drainages
Invertebrates		Asiatic clam	wd	statewide
		Fish	Goldfish	wd
Grass carp			wd	statewide in ponds/small lakes
Silver carp			d	eastern Kansas rivers
Bighead carp			d	Missouri River/lower Kansas River/ Arkansas River/lower Neosho River
Common carp			wd	statewide
Rudd			r	statewide in bait industry
White perch			d	Wilson Reservoir (Saline River/ Kansas River Drainage), Cheney Reservoir (North Fork Ninescaw River/ Arkansas River Drainage, and Missouri River
Yellow bass			d	Missouri River
<u>Kentucky</u>	Plants	Purple loosertrife	d	statewide
		Invertebrates	Spiny water flea	d
	Zebra mussel		wd	large rivers
	Asiatic clam		wd	large rivers
	Fish	Bighead carp	d	large rivers
Silver carp		d	large rivers	
<u>Louisiana</u>	Plants	Hydrilla	wd	Red/Atchafalaya/Sabine/Calcasieu/ Lafourche/Mermentau-Teche

		Giant Salvinia	wd	drainages Red/Atchafalaya/Sabine/Lafourche/ Mermentau-Teche/Pontchartrain drainages
		Water hyacinth	wd	statewide
		Eurasian watermilfoil	wd	Mississippi drainage
	Invertebrates	Zebra mussel	wd	Red/Atchafalaya/Mississippi/ Mermentau-Teche/ Pontchartrain drainages
		Asiatic clam	wd	Red/Atchafalaya/Pearl drainages
	Fish	Grass carp	wd	Red/Atchafalaya/Mississippi drainages
		Silver carp	wd	Red/Atchafalaya/Mississippi drainages
		Bighead carp	d	Red/Atchafalaya drainages
	Mammals	Nutria	wd	statewide
Minnesota	Plants	Purple loosestrife	d/wd	Mississippi/Minnesota/St. Croix rivers
		Curlyleaf pondweed	wd	statewide
		Flowering rush	c	a few lakes
		Eurasian watermilfoil	d	Mississippi River/Twin Cities lakes
	Invertebrates	Zebra mussel	wd	Mississippi River below Twin Cities
		Japanese mystery snail	d/wd	St. Croix River
	Fish	Common carp	wd	statewide
Mississippi	Plants	Alligatorweed	d	Big Sunflower/Lower Mississippi/ Middle Pearl/Silver/ Strong/Upper Tombigbee/ Pascagoula rivers
		Water-cress	d	Lower Mississippi River
		Parrot's feather	d	Tombigbee/Middle Tennessee/ Pascagoula/Pearl/Yazoo/ Sucamoochee rivers
		Eurasian water-milfoil	d	Tibbee/Upper Tombigbee rivers
		Purple loosestrife	d	Upper Hatchie River, scattered west of Corinth
		Yellow floating-heart	d	Lower Mississippi River
		Sacred lotus	d	Big Black/Homochitto rivers/ established in Hinds County
		Uruguay seedbox	d	Lower Mississippi River
		Marsh dewflower	d	Middle Tennessee/Elk rivers
		Brazilian waterweed	d	Lower Mississippi River
		Hydrilla	d/wd	Upper and Middle Tombigbee/ Lubbub rivers
		Dotted duckweed	d	Bayou Pierre/Big Sunflower/Middle Pearl/Strong rivers
		Brittle naiad	d	Pearl/Strong rivers
		Torpedo grass	d	Mississippi River
		Water hyacinth	d	Big Sunflower/Lower and Middle Pearl/ Strong/ Mississippi/Pascagoula rivers
	Fish	Bluespotted sunfish	d	Lower Big Black
		Green sunfish X Bluegill	s/?	Coldwater
		Largemouth bass	?	Chunky/Okatibbee/Middle Pearl/ Strong rivers
		Pirapatinga	?	Black/Lower Leaf rivers
		Oscar	?	Lower Mississippi River

		Blue tilapia	d	Coastal rivers
		Goldfish	d	Little Tallahatchie/Upper Pearl/Wolf/ Yaona rivers and other scattered locations
		Grass carp	d	Lower Mississippi/Gree rivers
		Common carp	d	Big Black/Homochitto/Black Warrior/ Tombigbee/Bogue Chitto/Chunky/ Okatibbee/ Lower Mississippi/Pearl/ Strong/Pascagoula/Tennessee/ Yazoo rivers
		Bighead carp	d	Large rivers
		Fathead minnow	d	Bogue chitto/Pascagoula/ Yazoo rivers
		White catfish	?	Tombigbee River
		White bass	?	Middle Pearl/Strong/Yaona rivers
		Striped bass	?	Chunky/Okatibbee/Little Tallahatchie/ Middle Pearl/Strong/Yalobusha rivers
		White bass X Striped bass	s/?	Tombigbee River
		Yellow perch	?	Coldwater/Upper Tombigbee rivers
		Sauger	?	Lower Mississippi/Gree/Middle Pearl/ Strong rivers
		Walleye	?	Yocona
		Mosquitofish	?	Hinds County
Missouri	Plants	Purple loosetrife	d	Missouri River and northern half of state
		Eurasian watermilfoil	wd	Statewide in streams
	Invertebrates	Spiny water flea	d	Osage/Salt/Chariton/White rivers
		Water flea	r	Osage
		Asiatic clam	wd	Chariton/Salt/Meramec/Osage/ Gasconade/Missouri/ St. Francis/ Black/Current/and Castor rivers
	Fish	Zebra mussel	r	Mississippi River
		Silver carp	r	Missouri River/Headwater Diversion Channel (Castor River) Cape Girardeau County
		Bighead carp	wd/d	Missouri/Chariton/Mississippi/ Osage rivers
		Rudd	r	Missouri River tributaries Clay and Jackson counties
		Common carp	wd	statewide
		Grass carp	wd/d	Mississippi/Missouri/St. Francis/ Osage rivers
		Rainbow smelt	d	Missouri/Mississippi rivers
		Brown trout	c/s	Osage/Gasconade/Meramec/ Current/ White rivers
		Rainbow trout	c/s	Osage/Gasconade/Meramec/ Current/ Eleven Point/White/ Spring rivers
		Striped bass	c/s	Missouri/Mississippi/Osage/ Black/ White rivers
		Muskellunge	c/s	Chariton/Platte/Osage/ Meramec/ Castor rivers
		Goldfish	c	statewide
Montana	Invertebrates	New Zealand Mud Snail	r/d	Madison, Firehole, and Gibbon rivers, Yellowstone National Park downstream to the Hebgen Reservoir

<u>Nebraska</u>	Plants	Purple loosestrife	d	expanding statewide	
	Invertebrates	Asiatic clam	r/d	sporadic in irrigation canals/ reservoirs	
		Chinese mysterysnail	r	Elkhorn River aquarium release	
	Fish	Bighead carp	d	Missouri and Platte rivers	
		Grass carp	d	Missouri and Platte rivers	
		White perch	d	Platte River system	
		Mosquitofish	d	Platte/Republican systems	
		Brook silversides	d	Platte River system	
		Rudd	r/d	sporadic bait releases	
		Yellow bass	r	eastern state lakes	
		Piranha/Pacu	r	sporadic aquarium releases	
		Redtail catfish	r	aquarium releases near Lincoln	
		Rio Grande cichlid	r	reservoir south of Lincoln	
<u>New York</u>	Plants	Purple loosestrife	wd	statewide	
		Water chestnut	c	large rivers	
		Eurasian watermilfoil	wd	statewide	
<u>N. Carolina</u>	Invertebrates	Asiatic clam	d	?	
	Fish	Flathead catfish	d	Some rivers and reservoirs	
<u>N. Dakota</u>	Plants	Purple loosestrife	wd	statewide	
		Eurasian watermilfoil	c	Sheyenne River	
		Water hyacinth	r	Valley City wetland	
	Fish	Common carp	wd	statewide	
		Grass carp	s/c	Spiritwood Lake	
		Striped bass	s/c	Devil's Lake	
<u>Ohio</u>	Plants	Purple loosestrife	wd/c	Statewide	
		Narrow-leaved cattail	wd	Statewide	
		Curly pondweed	wd	Statewide	
		Eurasian watermilfoil	wd	Statewide	
		Giant reed	wd	Central/Northern part of State	
		European buckthorn	?	?	
		Reed canary grass	?	?	
		Bushy pondweed	?	?	
	Invertebrates	Zebra mussel	wd	Ohio River and inland streams and lakes	
		Quagga mussel	wd	Ohio River and inland streams and lakes	
		Asiatic clam	wd	Statewide	
		Spiny water flea	?	One inland lake	
		African/Australian Daphnia	?	Inland lakes	
	Fish	White perch	wd	Inland streams	
		Common carp	wd	Statewide	
		Goldfish	wd	Statewide	
		Carp x Goldfish	wd	Statewide	
	<u>Oklahoma</u>	Plants	Eurasian watermilfoil	wd	statewide
		Invertebrates	Water flea	r	unknown
Asiatic clam			wd	statewide	
Zebra mussel			d	Arkansas River	
Fish		Blue tilapia	c	limited	
		Grass carp	wd	statewide	
		Common carp	wd	statewide	

		Bighead carp	d	unknown
		Rudd	c	rare, not established
<u>Pennsylvania</u>	Plants	Purple loosestrife	d	Statewide
	Invertebrates	Zebra mussel	d	lower Ohio River
		Asiatic clam	d	Statewide
	Fish	Common carp	wd	Statewide
<u>S. Dakota</u>	Plants	Purple loostrife	d	Missouri River below Ft. Randall
	Fish	Common carp	wd	Statewide rivers and lakes
		Bighead carp	d	Missouri River below Gavins Point Dam
		Rudd	d	Statewide lakes
<u>Tennessee</u>	Plants	Hydrilla	nd	nd
		Eurasian watermilfoil	nd	nd
		Spinyleaf naiad	nd	nd
		Purple loosestrife	nd	nd
		Curlyleaf pondweed	nd	nd
		Brazilian elodea	nd	nd
		Parrot's feather	nd	nd
	Invertebrates	Asiatic clam	nd	nd
		Zebra mussel	nd	nd
		Spiny daphnia	nd	nd
		Rusty crayfish	nd	nd
		Dark falsemussel	nd	nd
		Bankclimber mussel	nd	nd
		Southern mapleleaf mussel	nd	nd
	Fish	Blueback herring	nd	nd
		Alewife	nd	nd
		Atlantic needlefish	nd	nd
		Grass carp	nd	nd
		Bighead carp	nd	nd
		Yellow perch	nd	nd
		Silver carp	nd	nd
		Brassy minnow	nd	nd
		Weed shiner	nd	nd
		White catfish	nd	nd
		Flat bullhead	nd	nd
		Marginal madtom	nd	nd
		Rainbow smelt	nd	nd
		Brook stickleback	nd	nd
		Pumpkinseed	nd	nd
<u>Texas</u>	Plants	Curlyleaf pondweed	c	scattered locations
		Water-poppy	c	scattered locations
		Egeria	c	scattered locations
		Hydrilla	c	scattered locations
		Water bentgrass	c	scattered locations
		Variable flat sedge	c	scattered locations/may be native
		Purple flat sedge/nut grass	c	problematic in some farm ponds
		Giant duckweed	c	problematic in some farm pond/ may be native
		Floating water hyacinth	wd	some lakes (e.g. Caddo Lake)

	Yellow flag iris	c	scattered locations
	Crack willow	c	scattered locations
	Babylon weeping willow	c	semi-domestic situations
	Yellow dock	c	scattered locations
	Clustered dock	c	scattered locations
	Alligatorweed	c	scattered locations
	Purple loosestrife	c	scattered locations/still sold commercially
	Creeping buttercup	c	scattered locations
	Smallflower buttercup	c	scattered locations
	Hairy buttercup	c	scattered locations
	Spinyfruit buttercup	c	scattered locations
	Buttercup	c	scattered locations
	Water cress	c	scattered locations
	Marsh caperonia	c	scattered locations
	Large water starwort	c	scattered locations
	French tamarisk	u	scattered locations
	Small-flowered tamarisk	u	scattered locations
	Parrot's feather/ Brazilian watermilfoil	c	scattered locations
	Eurasian watermilfoil/ may be local native form	d/wd	some reservoirs/sometime noxious
	Yellow floating-heart	c	scattered locations
	False baby-blueeyes	c	scattered locations
	Beefsteak plant	c	scattered locations
	Roundleaf/Applemint	c	scattered locations
	Spearmint	c	scattered locations
	Peppermint	c	scattered locations
	Brook pimpernel/ Water-speedwell	c	scattered locations
Invertebrates	Asiatic clam	c	Canadian/Red/Pease river drainages
	Tampico pealymussel	u	Lake Texoma
Fish	Blueback herring	s/u	Upper Red River drainage reservoirs
	Common carp	wd	statewide
	Goldfish	c	used as baitfish statewide
	Grass carp	d/c	Red/Trinity rivers (successful reproduction in Trinity River), Triploid specimens legally stocked statewide
	Bighead carp	u/d	Red River below Lake Texoma
	Rudd	u	Lake Texoma/Red River
	Muskellunge	s/u	Pease River
	Rainbow trout	s/c	widely stocked for put and take fisheries
	Brown trout	s/u	Canadian River
	Striped bass	s/c	Canadian/Wichita/Little Wichita/ Red river reservoirs
	Rockbass	s/wd	Lake Texoma
	Redbreast sunfish	s/wd	basinwide
	Smallmouth bass	s/wd	Red/Canadian river drainages
	Florida largemouth bass	s/u	basinwide
	Coppernose bluegill	s/u	basinwide
	Walleye	s/wd	Canadian/Red river drainages
	Saugeye	s/u	basinwide
	Yellow perch	s/wd	Canadian/Red river drainages
	Red drum	s/u	Kemp/Wichita lakes

<u>Virginia</u>	Invertebrates	Asiatic clam	wd	Tennessee/New/Big Sandy rivers
		Fish	Rainbow trout	wd/s
	Brown trout		wd/s	Tennessee/New rivers
	Goldfish		wd	Tennessee River
	Common carp		wd	Tennessee/New/Big Sandy rivers
<u>W. Virginia</u>	Invertebrates	Zebra mussel	wd	Ohio/Kanawha rivers
		Fish	Asiatic clam	wd
	White perch		d	Ohio River
	Bighead carp		r	Ohio River
	Round goby		u	Unconfirmed Ohio River report
	Grass carp		wd/s	Statewide triploid stocking
	Rudd		r	One Kanawha River record
	Common carp	wd	Statewide	
<u>Wisconsin</u>	nd	nd	nd	nd
<u>Wyoming</u>	nd	nd	nd	nd

* r = recent
d = developing
wd = well developed
c = controlled infestation
s = stocked
u= unknown
nd=no data provided

Table 2. Aquatic Nuisance Species of the Mississippi River Basin with notations of distribution and status.

SPECIES	DISTRIBUTION AND STATUS* BY STATE																											
	AL	AR	CO	GA	IL	IN	IA	KS	KY	LA	MN	MS	MO	MT	NE	NY	NC	ND	OH	OK	PA	SD	TN	TX	VA	WV	WI	WY
PLANTS																												
Hydrilla	d/wd									wd		d/wd												nd	c			
Eurasian watermilfoil	d/wd				wd	wd	d			wd	d	d	wd			wd		c	wd	wd			nd	d/wd				
Brittle naiad	d/wd																											
Southern naiad	wd																											
Egeria	d																								c			
Floating water hyacinth	d/wd									wd		d						r							wd			
<i>Scirpus cubensis</i>	wd																											
Alligatorweed	d/wd											d													c			
Uruguay seedbox	d											d																
American lotus	d/wd																											
Giant cutgrass	d/wd																											
<i>Lyngbya spp.</i>	d																											
Water cress				wd			u					d													c			
Purple loosestrife				d	wd	wd	wd	d	d		d/wd	d	d		d	wd			wd	wd/c		d	d	nd	c			
Bog bullrush							u																					
Curlyleaf pondweed						wd	wd				wd									wd				nd	c			
Yellow flag iris																												
European pepperwort																												
Creeping yellow cress																												
Western saltcedar								wd																				
Giant Salvinia										wd																		
Flowering rush											c																	
Water chestnut																	c											
Water poppy																												
Water bentgrass																										c		
Variable flat sedge																										c		
Purple flat sedge/Nut grass																										c		
Giant duckweed																										c		
Crack willow																										c		
Babylon weeping willow																										c		
Yellow dock																										c		
Clustered dock																										c		
Creeping buttercup																										c		
Smallflower buttercup																										c		
Hairy buttercup																										c		
Spinyfruit buttercup																										c		
Buttercup																										c		
Marsh caperonia																										c		
Large water starwort																										c		
French tamarisk																										u		
Small-flowered tamarisk																										u		
Parrot's feather/Brazilian watermilfoil													d											nd	c			
Yellow floating-heart													d													c		
False baby-blueeyes																										c		
Beefsteak plant																										c		
Roundleaf/Applemint																										c		
Spearmint																										c		
Peppermint																										c		
Brook pimpernel/Water-speedwell																										c		
Narrow-leaved cattail																												
Giant reed																												
European buckthorn																												
Reed canary grass																												
Bushy pondweed																												
Spinyleaf naiad																												
Brazilian elodea																										nd		
Sacred lotus																												
Marsh dewflower													d															
Brazilian waterweed													d															
Dotted duckweed													d															
Torpedo grass													d															
Phragmites						wd																						
INVERTEBRATES																												
Spiny water flea						d			d																			
Water flea																												
African/Australian daphnia																												
New Zealand Mud Snail																												
Rusty crayfish							u																					
Asiatic clam	d	d	d			wd		wd	wd	wd	wd		wd		r/d		d			wd	wd	d		nd	c	wd	wd	
Zebra mussel	wd	wd				wd	wd	wd	wd	wd	wd		r							wd	wd	d	d	nd			wd	
Quagga mussel																												
Dark falsemussel																												
Bankclimber mussel																												
Southern mapleleaf mussel																												

SPECIES

DISTRIBUTION AND STATUS* BY STATE

	AL	AR	CO	GA	IL	IN	IA	KS	KY	LA	MN	MS	MO	MT	NE	NY	NC	ND	OH	OK	PA	SD	TN	TX	VA	WV	WI	WY	
Japanese mystery snail											d/wd																		
Chinese mystery snail																r													
Tampico pearly mussel																									u				
Big-ear radix																													
Gray field slug			d																										
AMPHIBIANS																													
Bull frog			wd																										
FISH																													
Grass carp	d	d	s/?		wd/d	u	d	wd		wd		d	wd/d		d			s/c		wd				nd	d/c		wd/s		
Common carp	wd	wd	s/?		wd	wd	wd	wd			wd	d	wd					wd	wd	wd	wd	wd		wd	wd	wd	wd		
Bighead carp	r/u	d			wd/d	wd	d	d	d	d		d	wd/d		d					d			d	nd	u/d		r		
Sliver carp	r/u	d			r	wd		d	d	wd			r											nd					
Rudd		d	s/?					r							r/d					c			d		u		r		
Tench			s/?																										
Threadfin shad			s/?																										
Gizzard shad						wd																							
Blueback herring				d																				nd	s/u				
Alewife																								nd					
Round goby					d																						u		
Goldfish			s/?		wd	wd		wd				d	c						wd						c	wd			
Carp x Goldfish hybrids					wd														wd										
Brassy minnow																								nd					
Fathead minnow												d																	
Weed shiner																								nd					
Spottail shiner			s/?																										
Golden shiner			s/?																										
Rainbow smelt			s/?										d											nd					
Brown trout			s/?										c/s												s/u	wd/s			
Rainbow trout			s/?										c/s												s/c	wd/s			
Brook trout			s/?																										
Lake trout			s/?																										
Golden trout			s/?																										
Snake River cutthroat trout			s/?																										
Yellowstone cutthroat trout			s/?																										
Kokanee salmon			s/?																										
Arctic grayling			s/?																										
Cutthroat x Rainbow trout			s/?																										
Pikes Peak Cutthroat trout			s/?																										
Tiger trout			s/?																										
Splake			s/?																										
White Bass			s/?									?																	
Striped bass			s/?									?	c/s					s/c							s/c				
White bass X Striped bass												s/?																	
Northern pike			s/?																										
Muskellunge			s/?										c/s												s/u				
Tiger muskie			s/?																										
Mosquitofish			s/?									?				d													
Brook silversides			s/?												d														
Brook stickleback																								nd					
Ninespine stickleback			s/?																										
Yellow bass								d							r														
Piranha/Pacu															r														
Pirapatinga												?																	
Oscar												?																	
Brown bullhead			s/?																										
Blue catfish			s/?																										
Flathead catfish			s/?															d											
White catfish												?												nd					
Redtail catfish															r														
Flat bullhead																								nd					
Marginal madtom																								nd					
Rio Grande cichlid															r														
Blue tilapia												d									c								
Rockbass																									s/wd				
Bluegill			s/?																										
Pumpkinseed			s/?																					nd					
Redear sunfish			s/?																										
Black crappie			s/?																										
White crappie			s/?																										
Sacramento perch			s/?																										
Hybrid sunfish			s/?																										
Green sunfish X Bluegill												s/?																	
Bluespotted sunfish												d																	
Redbreast sunfish																									s/wd				
Smallmouth bass			s/?																						s/wd				
Largemouth bass			s/?										?																

SPECIES

DISTRIBUTION AND STATUS* BY STATE

	AL	AR	CO	GA	IL	IN	IA	KS	KY	LA	MN	MS	MO	MT	NE	NY	NC	ND	OH	OK	PA	SD	TN	TX	VA	WV	WI	WY
Florida largemouth bass																								s/u				
Spotted bass			s/?																									
Palmetto bass			s/?																									
Sunshine bass			s/?																									
Coppernose bluegill																								s/u				
Yellow perch			s/?								?												nd	s/wd				
White perch					d			d							d					wd							d	
Walleye			s/?								?													s/wd				
Sauger											?																	
Saugeye			s/?																						s/u			
Red drum																									s/u			
Zander																				s/c								
Southern platyfish			s/?																									
Atlantic needlefish																								nd				
Freshwater drum			s/?																									

MAMMALS

Nutria wd

* r = recent d = developing wd = well developed c = controlled infestation s = stocked u = unknown nd = no data provided