**NEW YORK**

**FISH & AQUATIC INVERTEBRATE INVASIVENESS RANKING FORM**

<table>
<thead>
<tr>
<th>Scientific name:</th>
<th>Mylopharyngodon piceus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common names:</td>
<td>Black Carp</td>
</tr>
<tr>
<td>Native distribution:</td>
<td>Most major Pacific drainages of eastern Asia, possibly native to northern Vietnam</td>
</tr>
<tr>
<td>Date assessed:</td>
<td>06/12/2013</td>
</tr>
<tr>
<td>Assessors:</td>
<td>D. Adams</td>
</tr>
<tr>
<td>Reviewers:</td>
<td></td>
</tr>
<tr>
<td>Date Approved:</td>
<td></td>
</tr>
</tbody>
</table>

**New York Invasiveness Rank:** Moderate (Relative Maximum Score 50.00-69.99)

**Distribution and Invasiveness Rank (Obtain from PRISM invasiveness ranking form)**

<table>
<thead>
<tr>
<th>Status of this species in each PRISM:</th>
<th>Current Distribution</th>
<th>PRISM Invasiveness Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Adirondack Park Invasive Program</td>
<td>Not Present</td>
<td>Not Assessed</td>
</tr>
<tr>
<td>2 Capital/Mohawk</td>
<td>Not Present</td>
<td>Not Assessed</td>
</tr>
<tr>
<td>3 Catskill Regional Invasive Species Partnership</td>
<td>Not Present</td>
<td>Not Assessed</td>
</tr>
<tr>
<td>4 Finger Lakes</td>
<td>Not Present</td>
<td>Not Assessed</td>
</tr>
<tr>
<td>5 Long Island Invasive Species Management Area</td>
<td>Not Present</td>
<td>Not Assessed</td>
</tr>
<tr>
<td>6 Lower Hudson</td>
<td>Not Present</td>
<td>Not Assessed</td>
</tr>
<tr>
<td>7 Saint Lawrence/Eastern Lake Ontario</td>
<td>Not Present</td>
<td>Not Assessed</td>
</tr>
<tr>
<td>8 Western New York</td>
<td>Not Present</td>
<td>Not Assessed</td>
</tr>
</tbody>
</table>

**Invasiveness Ranking Summary**

(see details under appropriate sub-section)

<table>
<thead>
<tr>
<th></th>
<th>Total (Total Answered*) Possible</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Ecological impact</td>
<td>30 (30)</td>
<td>20</td>
</tr>
<tr>
<td>2 Biological characteristic and dispersal ability</td>
<td>30 (30)</td>
<td>16</td>
</tr>
<tr>
<td>3 Ecological amplitude and distribution</td>
<td>30 (30)</td>
<td>14</td>
</tr>
<tr>
<td>4 Difficulty of control</td>
<td>10 (10)</td>
<td>6</td>
</tr>
<tr>
<td>Outcome score</td>
<td>100 (100)ª</td>
<td>56ª</td>
</tr>
<tr>
<td>Relative maximum score †</td>
<td></td>
<td>56</td>
</tr>
</tbody>
</table>

**New York Invasiveness Rank §** Moderate (Relative Maximum Score 50.00-69.99)

* For questions answered “unknown” do not include point value in “Total Answered Points Possible.” If “Total Answered Points Possible” is less than 70.00 points, then the overall invasive rank should be listed as “Unknown.”

†Calculated as 100(a/b) to two decimal places.

‡Very High >80.00; High 70.00–80.00; Moderate 50.00–69.99; Low 40.00–49.99; Insignificant <40.00

A. DISTRIBUTION (KNOWN/POTENTIAL): Summarized from individual PRISM forms

A1.1. Has this species been documented in NY? (reliable source; voucher not required)

| ☑ | Yes – continue to A1.2 |
| ☒ | No – continue to A2.1: Yes ☒ NA; Yes ☒ USA |

A1.2. In which PRISMs is it known (see inset map)?

| ☑ | Adirondack Park Invasive Program |
| ☑ | Capital/Mohawk |
| ☑ | Catskill Regional Invasive Species Partnership |
| ☑ | Finger Lakes |
| ☑ | Long Island Invasive Species Management Area |
| ☑ | Lower Hudson |
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Documentations:
Sources of information:
www.nas.er.usgs.gov; www.fishbase.org

A2.0. Is this species listed on the Federal Injurious Fish and Wildlife list?
☒ Yes – the species will automatically be listed as Prohibited, no further assessment required.
☐ No – continue to A2.1

A2.1. What is the likelihood that this species will occur and persist given the climate in the following PRISMs? (obtain from PRISM invasiveness ranking form and/or Climatch score)

<table>
<thead>
<tr>
<th>PRISM</th>
<th>Likelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adirondack Park Invasive Program</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Capital/Mohawk</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Catskill Regional Invasive Species Partnership</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Finger Lakes</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Long Island Invasive Species Management Area</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Lower Hudson</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Saint Lawrence/Eastern Lake Ontario</td>
<td>Moderately Likely</td>
</tr>
<tr>
<td>Western New York</td>
<td>Moderately Likely</td>
</tr>
</tbody>
</table>

Documentation:
Sources of information (e.g.: distribution models, literature, expert opinions):
www.nas.er.usgs.gov; www.fishbase.org

If the species does not occur and is not likely to survive and reproduce within any of the PRISMs, then stop here as there is no need to assess the species.

A2.2. What is the current distribution of the species in each PRISM? (obtain rank from PRISM invasiveness ranking forms)

<table>
<thead>
<tr>
<th>PRISM</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adirondack Park Invasive Program</td>
<td>Not Present</td>
</tr>
<tr>
<td>Capital/Mohawk</td>
<td>Not Present</td>
</tr>
<tr>
<td>Catskill Regional Invasive Species Partnership</td>
<td>Not Present</td>
</tr>
<tr>
<td>Finger Lakes</td>
<td>Not Present</td>
</tr>
<tr>
<td>Long Island Invasive Species Management Area</td>
<td>Not Present</td>
</tr>
<tr>
<td>Lower Hudson</td>
<td>Not Present</td>
</tr>
<tr>
<td>Saint Lawrence/Eastern Lake Ontario</td>
<td>Not Present</td>
</tr>
<tr>
<td>Western New York</td>
<td>Not Present</td>
</tr>
</tbody>
</table>

Documentation:
Sources of information:
www.nas.er.usgs.gov; www.fishbase.org

A2.3. Describe the potential or known suitable habitats within New York. Natural habitats include all habitats not under active human management. Managed habitats are indicated with an asterisk.

<table>
<thead>
<tr>
<th>Aquatic Habitats</th>
<th>Wetland Habitats</th>
<th>Upland Habitats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marine</td>
<td>Salt/brackish marshes</td>
<td>Cultivated*</td>
</tr>
<tr>
<td>Salt/brackish waters</td>
<td>Freshwater marshes</td>
<td>Grasslands/old fields</td>
</tr>
<tr>
<td>Freshwater tidal</td>
<td>Peatlands</td>
<td>Shrublands</td>
</tr>
<tr>
<td>Rivers/streams</td>
<td>Shrub swamps</td>
<td>Forests/woodlands</td>
</tr>
<tr>
<td>Natural lakes and ponds</td>
<td>Forested wetlands/riparian</td>
<td>Alpine</td>
</tr>
<tr>
<td>Vernal pools</td>
<td>Ditches*</td>
<td>Roadsides*</td>
</tr>
<tr>
<td>Reservoirs/ impoundments*</td>
<td>Beaches/or coastal dunes</td>
<td>Cultural*</td>
</tr>
</tbody>
</table>

Other potential or known suitable habitats within New York:

Documentation:
Sources of information:
B. INVASIVENESS RANKING

1. ECOLOGICAL IMPACT

1.1. Impact on Ecosystem Processes and System-wide Parameters (e.g., water cycle, energy cycle, nutrient and mineral dynamics, light availability, or geomorphological changes (erosion and sedimentation rates)).

A. No perceivable impact on ecosystem processes based on research studies, or the absence of impact information if a species is widespread (>10 occurrences in minimally managed areas), has been well-studied (>10 reports/publications), and has been present in the northeast for >100 years. 0
B. Influences ecosystem processes to a minor degree, has a perceivable but mild influence 3
C. Significant alteration of ecosystem processes 7
D. Major, possibly irreversible, alteration or disruption of ecosystem processes 10
U. Unknown

Documentation:
Identify ecosystem processes impacted (or if applicable, justify choosing answer A in the absence of impact information)
Black carp are a bottom dwelling molluscivores.
Sources of information:
www.nas.er.usgs.gov; www.fishbase.org

Score 3

1.2. Impact on Natural Habitat/ Community Composition

A. No perceived impact; causes no apparent change in native populations 0
B. Influences community composition (e.g., reduces the number of individuals of one or more native species in the community) 3
C. Significantly alters community composition (e.g., produces a significant reduction in the population size of one or more native species in the community) 7
D. Causes major alteration in community composition (e.g., results in the extirpation of one or several native species, reducing biodiversity or change the community composition towards species exotic to the natural community) 10
U. Unknown

Documentation:
Identify type of impact or alteration:
Black carp have the potential to restructure benthic communities by direct predation and removal of algae grazing snails.
Sources of information:
www.nas.er.usgs.gov; www.fishbase.org

Score 7

1.3. Impact on other species or species groups, including cumulative impact of this species on other organisms in the community it invades. (e.g., interferes with native predator/prey dynamics; injurious components/spines; reduction in spawning; hybridizes with a native species; hosts a non-native disease which impacts a native species)

A. Negligible perceived impact 0
B. Minor impact (e.g. impacts 1 species, <20% population decline, limited host damage) 3
C. Moderate impact (e.g. impacts 2-3 species and/or 20-29% population decline of any 1 species, kills host in 2-5 years,) 7
D. Severe impact on other species or species groups (e.g. impacts >3 species and/or ≥30% population decline of any 1 species, kills host within 2 years, extirpation) 10
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<table>
<thead>
<tr>
<th>U.</th>
<th>Unknown</th>
<th>Score 10</th>
</tr>
</thead>
</table>

**Documentation:**
Identify type of impact or alteration:
There is a high potential that the black carp would negatively impact native aquatic communities by feeding on and reducing populations of native mussels and snails, many of which are considered endangered or threatened.
Sources of information:
www.nas.er.usgs.gov; www.fishbase.org

<table>
<thead>
<tr>
<th>Total Possible</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section One Total</td>
<td>20</td>
</tr>
</tbody>
</table>

**2. BIOLOGICAL CHARACTERISTICS AND DISPERSAL ABILITY**

2.1. Mode and rate of reproduction (provisional thresholds, more investigation needed)

<table>
<thead>
<tr>
<th>A.</th>
<th>No reproduction (e.g. sterile with no sexual or asexual reproduction).</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.</td>
<td>Limited reproduction (e.g., intrinsic rate of increase &lt;10%, low fecundity, complete one life cycle)</td>
<td>1</td>
</tr>
<tr>
<td>C.</td>
<td>Moderate reproduction (e.g., intrinsic rate of increase between 10-30%, moderate fecundity, complete 2-3 life cycles)</td>
<td>2</td>
</tr>
<tr>
<td>D.</td>
<td>Abundant reproduction (e.g., intrinsic rate of increase &gt;30%, parthenogenesis, large egg masses, complete &gt; 3 life cycles)</td>
<td>4</td>
</tr>
<tr>
<td>U.</td>
<td>Unknown</td>
<td>1</td>
</tr>
</tbody>
</table>

**Documentation:**
Describe key reproductive characteristics:
Subtropical. Persists in Europe only by stocking or accidental release.
Sources of information:
www.nas.er.usgs.gov; www.fishbase.org

2.2. Migratory behavior

<table>
<thead>
<tr>
<th>A.</th>
<th>Always migratory in its native range</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.</td>
<td>Non-migratory or facultative migrant in its native range</td>
<td>2</td>
</tr>
<tr>
<td>U.</td>
<td>Unknown</td>
<td>2</td>
</tr>
</tbody>
</table>

**Documentation:**
Describe migratory behavior:
Undertakes upriver migration and spawns in open waters.
Sources of information:
www.nas.er.usgs.gov; www.fishbase.org

2.3. Biological potential for colonization by long-distance dispersal/ movement (e.g., veligers, resting stage eggs, glochidia)

<table>
<thead>
<tr>
<th>A.</th>
<th>No long-distance dispersal/ movement mechanisms</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.</td>
<td>Adaptations exist for long-distance dispersal, but studies report that most individuals (90%) establish territories within 5 miles of natal origin or within a distance twice the home range of the typical individual, and tend not to cross major barriers such as dams and watershed divides</td>
<td>1</td>
</tr>
<tr>
<td>C.</td>
<td>Adaptations exist for long-distance dispersal, movement and evidence that offspring often disperse greater than 5 miles of natal origin or greater than twice the home range of typical individual and will cross major barriers such as dams and watershed divides</td>
<td>2</td>
</tr>
<tr>
<td>U.</td>
<td>Unknown</td>
<td>1</td>
</tr>
</tbody>
</table>
**NEW YORK**  
**FISH & AQUATIC INVERTEBRATE INVASIVENESS RANKING FORM**

### Documentation:
Identify dispersal mechanisms:
Undertakes upriver migration for spawning. Deposit pelagic or semipelagic eggs which hatch while drifting downstream.
Sources of information:
www.nas.er.usgs.gov; www.fishbase.org

#### 2.4. Practical potential to be spread by human activities, both directly and indirectly – possible vectors include: commercial bait sales, deliberate illegal stocking, aquaria releases, boat trailers, canals, ballast water exchange, live food trade, rehabilitation, pest control industry, aquaculture escapes, etc.)

<table>
<thead>
<tr>
<th></th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Does not occur</td>
<td>0</td>
</tr>
<tr>
<td>B. Low (human dispersal to new areas occurs almost exclusively by direct means and is infrequent or inefficient)</td>
<td>1</td>
</tr>
<tr>
<td>C. Moderate (human dispersal to new areas occurs by direct and indirect means to a moderate extent)</td>
<td>2</td>
</tr>
<tr>
<td>D. High (opportunities for human dispersal to new areas by direct and indirect means are numerous, frequent, and successful)</td>
<td>4</td>
</tr>
<tr>
<td>U. Unknown</td>
<td></td>
</tr>
</tbody>
</table>

#### Score 2

### Documentation:
Identify dispersal mechanisms:
This species was first brought into the US in the early 1970s as a contaminant in imported grass carp stocking. Since imported as a food fish as a biological control agent to combat the spread of yellow grub in aquaculture ponds.
Sources of information:
www.nas.er.usgs.gov; www.fishbase.org

#### 2.5. Non-living chemical and physical characteristics that increase competitive advantage (e.g., tolerance to various extremes, pH, DO, temperature, desiccation, fill vacant niche, charismatic species)

<table>
<thead>
<tr>
<th></th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Possesses no characteristics that increase competitive advantage</td>
<td>0</td>
</tr>
<tr>
<td>B. Possesses one characteristic that increases competitive advantage</td>
<td>4</td>
</tr>
<tr>
<td>C. Possesses two or more characteristics that increase competitive advantage</td>
<td>8</td>
</tr>
<tr>
<td>U. Unknown</td>
<td></td>
</tr>
</tbody>
</table>

#### Score 4

### Documentation:
Evidence of competitive ability:
Life span of black carp is reportedly over 15 years.
Sources of information:
www.nas.er.usgs.gov; www.fishbase.org

#### 2.6. Biological characteristics that increase competitive advantage (e.g., high fecundity, generalist/ broad niche space, highly evolved defense mechanisms, behavioral adaptations, piscivorous, etc.)

<table>
<thead>
<tr>
<th></th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Possesses no characteristics that increase competitive advantage</td>
<td>0</td>
</tr>
<tr>
<td>B. Possesses one characteristic that increases competitive advantage</td>
<td>4</td>
</tr>
<tr>
<td>C. Possesses two or more characteristics that increase competitive advantage</td>
<td>8</td>
</tr>
<tr>
<td>U. Unknown</td>
<td></td>
</tr>
</tbody>
</table>

#### Score 4

### Documentation:
Evidence of competitive ability:
Its pharyngeal teeth are large as an adaptation for crushing the shells of mollusks.
2.7. Other species in the family and/or genus invasive in New York or elsewhere?

A. No 0
B. Yes 2
U. Unknown Score 2

Documentation:
Identify species:
Closely related to Grass Carp.

Score: 2

Total Possible: 30
Section Two Total: 16

3. ECOLOGICAL AMPLITUDE AND DISTRIBUTION

3.1. Current introduced distribution in the northern latitudes of USA and southern latitude of Canada (e.g., between 35 and 55 degrees).

A. Not known from the northern US or southern Canada. 0
B. Established as a non-native in 1 northern USA state and/or southern Canadian province. 1
C. Established as a non-native in 2 or 3 northern USA states and/or southern Canadian provinces. 2
D. Established as a non-native in 4 or more northern USA states and/or southern Canadian provinces, and/or categorized as a problem species (e.g., “Invasive”) in 1 northern state or southern Canadian province. 3
U. Unknown Score 1

Documentation:
Identify states and provinces:
Subtropical, 53 degrees N to 15 degrees N. Black Carp have been reported in Arkansas, Illinois, Mississippi and Missouri.
Sources of information:
- See known introduced range at www.usda.gov, and update with information from states and Canadian provinces.
www.nas.er.usgs.gov; www.fishbase.org

3.2. Current introduced distribution of the species in natural areas in the eight New York State PRISMs (Partnerships for Regional Invasive Species Management)

A. Established in none of the PRISMs 0
B. Established in 1 PRISM 1
C. Established in 2 or 3 PRISMs 3
D. Established in 4 or more PRISMs 5
U. Unknown Score 0

Documentation:
Describe distribution:
Not documented in any PRISMs.
Sources of information:
www.nas.er.usgs.gov; www.fishbase.org

3.3. Number of known, or potential (each individual possessed by a vendor or
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consumer), individual releases and/ or release events
A. None 0
B. Few releases (e.g., <10 annually). 2
C. Regular, small scale releases (e.g., 10-99 annually). 4
D. Multiple, large scale (e.g., ≥100 annually). 6
U. Unknown

Score 4

Documentation:
Describe known or potential releases:
First brought to the US in the early 1970s with subsequent introductions in the 1980s.
Reportedly escaped when aquaculture facilities flooded.
Sources of information:
www.nas.er.usgs.gov; www.fishbase.org

3.4. Current introduced population density, or distance to known occurrence, in
northern USA and/ or southern Canada.
A. No known populations established. 0
B. Low to moderate population density (e.g., ≤1/4 to < 1/2 native population density) with few
other invasives present and/ or documented in 1 or more non-adjacent state/ province and/ or
1 unconnected waterbody. 1
C. High or irruptive population density (e.g., ≥1/2 native population density) with numerous
other invasives present and/ or documented in 1 or more adjacent state/ province and/ or 1
connected waterbody. 2
U. Unknown

Score 1

Documentation:
Describe population density:
During the 1990s numbers being held by fish farmers in a few southern states totaled well over
400,000, including triploids and diploids. There have been no adequate field surveys to
determine distribution and abundance of Black Carp in the Mississippi basin.
Sources of information:
www.nas.er.usgs.gov; www.fishbase.org

3.5. Number of habitats the species may invade
A. Not known to invade any natural habitats given at A2.3. 0
B. Known to occur in 2 or 3 of the habitats given at A2.3, with at least 1 or 2 natural habitat(s). 2
C. Known to occur in 4 or more of the habitats given at A2.3, with at least 3 natural habitats. 3
U. Unknown.

Score 2

Documentation:
Identify type of habitats where it occurs and degree/type of impacts:
Adults inhabit large lowland rivers and lakes, preferably with clear water and high oxygen
concentrations.
Sources of information:
www.nas.er.usgs.gov; www.fishbase.org

3.6. Role of anthropogenic (human related) and natural disturbance in establishment
(e.g. water level management, man-made structures, high vehicle traffic, major storm
events, etc).
A. Requires anthropogenic disturbances to establish. 0
B. May occasionally establish in undisturbed areas but can readily establish in areas with

2
natural or anthropogenic disturbances.

C. Can establish independent of any known natural or anthropogenic disturbances. 3

U. Unknown.

Score 2

Documentation:
Identify type of disturbance:
Established post flooding of aquaculture facilities. Persists only by stocking or accidental releases in Europe.
Sources of information:
nas.er.usgs.gov; www.fishbase.org

3.7. Climate in native range (e.g., med. to high, ≥5, Climatch score; within 35 to 55 degree latitude; etc.)

A. Native range does not include climates similar to New York (e.g., <10%). 0

B. Native range possibly includes climates similar to portions of New York (e.g., 10-29%). 4

C. Native range includes climates similar to those in New York (e.g., ≥30%). 8

U. Unknown.

Score 4

Documentation:
Describe known climate similarities:
Subtropical. ≤ to 40 degrees C. The majority of the US between the Mississippi River basin and the Atlantic coast has a moderate to high predicted ecological suitability for this species.
Sources of information:
nas.er.usgs.gov; www.fishbase.org

Total Possible 30

Section Three Total 14

4. DIFFICULTY OF CONTROL

4.1. Re-establishment potential, nearby propagule source, known vectors of re-introduction (e.g. biological supplies, pets, aquaria, aquaculture facilities, connecting waters/ corridors, mechanized transportation, live wells, etc.)

A. No known vectors/ propagule source for re-establishment following removal. 0

B. Possible re-establishment from 1 vector/ propagule source following removal and/or viable <24 hours. 1

C. Likely to re-establish from 2-3 vectors/ propagule sources following removal and/or viable 2-7 days. 2

D. Strong potential for re-establishment from 4 or more vectors/ propagule sources following removal and/or viable >7 days. 3

U. Unknown.

Score 2

Documentation:
Identify source/ vectors:
Introduced to control disease carying snails in fish farm facilities. Escaped during flooding events.
Sources of information:
www.nas.er.usgs.gov; www.fishbase.org

4.2. Status of monitoring and/ or management protocols for species

A. Standardized protocols appropriate to New York State are available. 0

B. Scientific protocols are available from other countries, regions or states. 1

C. No known protocols exist. 2
U. Unknown

**Documentation:**
Describe protocols:
No adequate field surveys conducted to determine the distribution and abundance of Black Carp in the Mississippi River basin.
Sources of information:
www.nas.er.usgs.gov; www.fishbase.org

**Score 2**

4.3. Status of monitoring and/or management resources (e.g. tools, manpower, travel, traps, lures, ID keys, taxonomic specialists, etc.)

A. Established resources are available including commercial and/or research tools
B. Monitoring resources may be available (e.g. partnerships, NGOs, etc)
C. No known monitoring resources are available
U. Unknown

**Score 1**

**Documentation:**
Describe resources:
Great Lakes fisheries monitoring program.
Sources of information:
NYS DEC Great Lakes Fisheries Program.

4.4. Level of effort required

A. Management is not required. (e.g., species does not persist without repeated human mediated action.)
B. Management is relatively easy and inexpensive; invasive species can be maintained at low abundance causing little or no ecological harm. (e.g., 10 or fewer person-hours of manual effort can eradicate a local infestation in 1 year.)
C. Management requires a major short-term investment, and is logistically and politically challenging; eradication is difficult, but possible. (e.g., 100 or fewer person-hours/year of manual effort, or up to 10 person-hours/year for 2-5 years to suppress a local infestation.)
D. Management requires a major investment and is logistically and politically difficult; eradication may be impossible. (e.g., more than 100 person-hours/year of manual effort, or more than 10 person hours/year for more than 5 years to suppress a local infestation.)
U. Unknown

**Score 1**

**Documentation:**
Identify types of control methods and time required:
If introduced to the Great Lakes this species is expected to establish limited populations.
Sources of information:
nas.er.usgs.gov; www.fishbase.org

Total Possible 10
Section Four Total 6
Total for 4 sections Possible 100
Total for 4 sections 56

C. STATUS OF GENETIC VARIANTS AND HYBRIDS:

At the present time there is no protocol or criteria for assessing the invasiveness of genetic variants independent of the species to which they belong. Such a protocol is needed, and individuals with the
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Appropriate expertise should address this issue in the future. Such a protocol will likely require data on cultivar fertility and identification in both experimental and natural settings.

Genetic variants of the species known to exist: Yes, triploid and diploid varieties.

Hybrids (crosses between different parent species) should be assessed individually and separately from the parent species wherever taxonomically possible, since their invasiveness may differ from that of the parent species. An exception should be made if the taxonomy of the species and hybrids are uncertain, and species and hybrids can not be clearly distinguished in the field. In such cases it is not feasible to distinguish species and hybrids, and they can only be assessed as a single unit.

Hybrids of uncertain origin known to exist: Closely related to Grass Carp.

References for species assessment:
New York State Department of Environmental Conservation, Great Lakes Fisheries Unit.

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References for ranking form:


Natural Resources Board Order No. IS-34-06, Invasive Species Identification, Classification and Control. 2008. Wisconsin Department of Natural Resources, Madison Wisconsin.


Standard Methodology to Assess the Risks From Non-native Species Considered Possible Problems to the Environment. 2005. DEFRA.
