



Region 3 - Great Lakes/Big Rivers

Asian Carp - Aquatic Invasive Species

Issues, Program Accomplishments, and Program Needs



-photo by D. Riecks

Bighead carp



-photo by L. Lovshin

Silver carp



-photo by B. Tabor

Grass carp



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Black carp

Pathways and Introductions into the United States

Bighead, silver, grass, and black carp are native to Asia. Grass carp were first introduced into the United States in 1963, whereas bighead, silver, and black carp arrived in the 1970s. All four species escaped into the Mississippi River Basin, and all but the black carp are known to have developed self-sustaining populations. Bighead and grass carp were captured in the Great Lakes Basin, but there is no evidence of reproduction to date.

Biology and Ecology

Bighead carp grow to a maximum of about 60 inches and 110 pounds. Silver carp also grow very fast compared to most native fishes in the United States. In aquaculture facilities, silver carp have grown to 12 pounds in one year, and may grow to a maximum of 39 inches and 60 pounds. Grass carp can eat up to 40% of their body weight per day, and grow to a maximum of 59 inches, 99 pounds, and live up to 21 years. Black carp can grow to a maximum of 48 inches, and 71 pounds, on a diet composed almost exclusively of snails, mussels, and other invertebrates.

Distribution and Abundance

Grass carp inhabit waters within and bordering 45 states, whereas bighead carp have been collected from 18 states, silver carp from 12 states, and black carp from only Illinois (some escaped from an aquaculture facility in Missouri). See the maps on the last page for more details on the distribution of the four species of Asian carp.

Data from the Illinois Natural History Survey indicates that bighead carp abundance has been increasing exponentially in a portion of the Upper Mississippi River. The population has tended to double there every year. Bighead carp populations may be increasing at equally fast rates on portions of the Illinois and Missouri Rivers, while silver carp abundance may be increasing at similar rates in all of those rivers.

Ecological Risks and Impacts



-USFWS

Silver carp jump up to 10 feet out of the water when motorized vessels pass by. This behavior has resulted in injuries to boaters.

Detailed ecological risk assessments are being completed for bighead, silver, and black carp. Known risks include rapid range expansion and population increase which could decrease abundance of native mussels, other invertebrates, and fishes. Grass carp can eliminate vast areas of aquatic plants that are important as fish food and spawning and nursery habitats. Losses of those habitats can potentially reduce recruitment and abundance of native fishes. Black carp could reduce abundance of already rare snails, mussels, and other invertebrates. Silver carp can jump at least 10 feet out of the water and that behavior has resulted in injuries to boaters. Collisions between boaters and jumping silver carp have the potential to cause human fatalities.

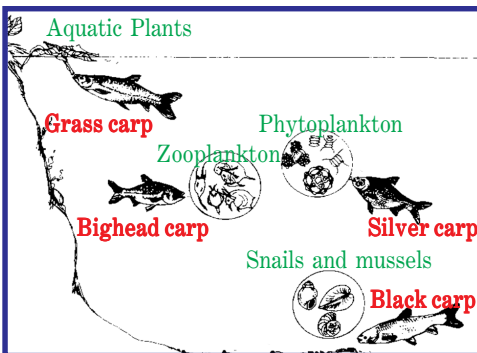
(see picture at left, and video at: <http://www.protectyourwaters.net/>)

Threats to the Great Lakes Basin

Bighead and silver carp are in the Illinois River, which is connected to the Great Lakes via the Chicago Sanitary and Ship Canal. Asian carp pose the greatest immediate threat to the Great Lakes ecosystem. An electrical barrier designed to repel fish was placed in the waterway. It is experimental and may not be 100% effective but remains the only defense against the upstream movement of bighead and silver carp from the Illinois River into the Great Lakes. Bighead and silver carp could colonize all of the Great Lakes and sustain high-density populations. High densities would likely result in declines in abundance of many native fishes. Presently, bighead and silver carp are known to be within 22 miles of the electric barrier which is about 25 miles from Lake Michigan. Both species could reach the Great Lakes by swimming through the electrical barrier, or by release of bait fish or fish sold live for food.

Great Lakes sport and commercial fisheries are valued at \$4.5 billion dollars annually, without including the indirect economic impact of those industries. Degradation of those fisheries would have severe economic impacts on Great Lakes communities that benefit from the fisheries. Waterfowl production areas are also at risk from Asian carp. Hunters spend more than \$2.6 billion annually on their sport in the Great Lakes, so reduction of waterfowl populations there would decrease the economic value to communities that benefit from hunting. The effects of Asian carp on wetlands in the Prairie Pothole Region would have an even greater effect on hunting and the economies it supports.

Feeding niches of grass, bighead, silver, and black carp.
(From Bardach et al.)



-from Bardach, et al. 1972. *Aquaculture: The Farming and Husbandry of Freshwater and Marine Organisms*. J. Wiley & Sons.



-USFWS

This 26.5 pound bighead carp was captured during a 2002 invasive species assessment on the Illinois River.

Threat to Other Basins and Locations

Bighead and silver carp are the Asian carp species that pose the greatest, immediate threat to basins and reaches of rivers not yet colonized. Black carp also poses risk of establishment and ecologic impact. Grass carp have already become widely established. As large populations of Asian carp become established, cumulative effects of those species include risk to human safety, reductions of native plants that provide spawning and nursery areas for fishes, reduced food for native fishes and waterfowl, and reductions in dollars for regional economies that rely on fishing, boating, and waterfowl hunting.

What is the Fish and Wildlife Service Doing?

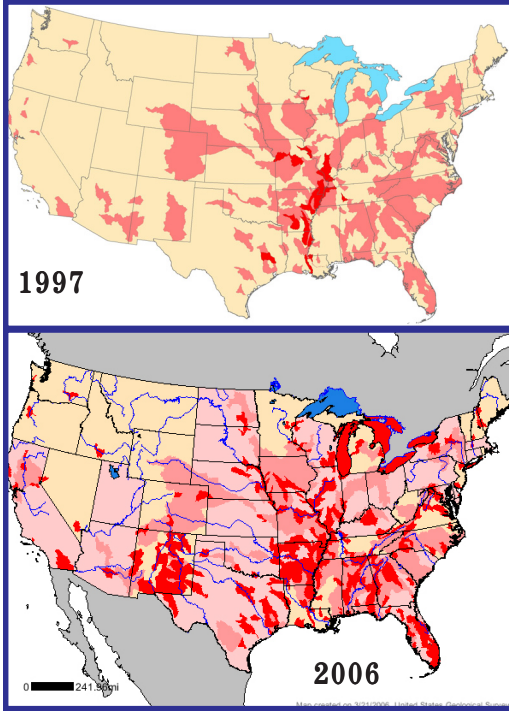
- The Fish and Wildlife Service provides funding to implement State and Interstate Management Plans. The plans integrate strategies to limit range expansion, abundance, and economic impacts of Asian carp and other species.
- We also provide operating expenses for six Regional Panels (Great Lakes, Mississippi Basin, Western, Northeast, Gulf, and MidAtlantic) on Aquatic Nuisance Species. The Panels were established to identify the highest priority activities in each region, coordinate activities in each region, and advise public and private interests on control efforts. Asian carp are the biggest concern for the Great Lakes and Mississippi Basin panels.
- The Fish and Wildlife Service leads the development of a National Management and Control Plan for Asian carp. The Plan will be the blueprint for interagency activities to prevent, manage, and control Asian carp.
- We will continue to work with our partners to develop and implement approaches to identify methods that will help us control Asian carp. For more information, see the Fish and Wildlife Service websites at:
<http://www.fws.gov/midwest/Fisheries/topic-ans.htm>, and
<http://www.fws.gov/contaminants/Issues/InvasiveSpecies.cfm>.
- The Fish and Wildlife Service is working with partners to conduct research to learn about Asian carp life histories and biology. By learning more about carp in our lakes and rivers, we hope to control Asian carp, so they have minimal impacts on native fish and wildlife.



-USFWS

Columbia Fishery Resources Office employees hold this grass carp captured in a fishery assessment in the Missouri River.

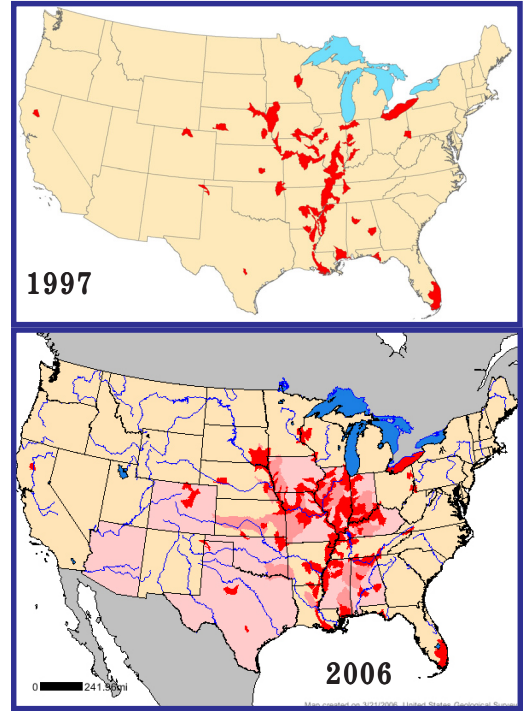
The future of many of our fish and wildlife resources depends on our ability to control Asian carp populations and their effects. We continue to work with our partners to deal with this threat.



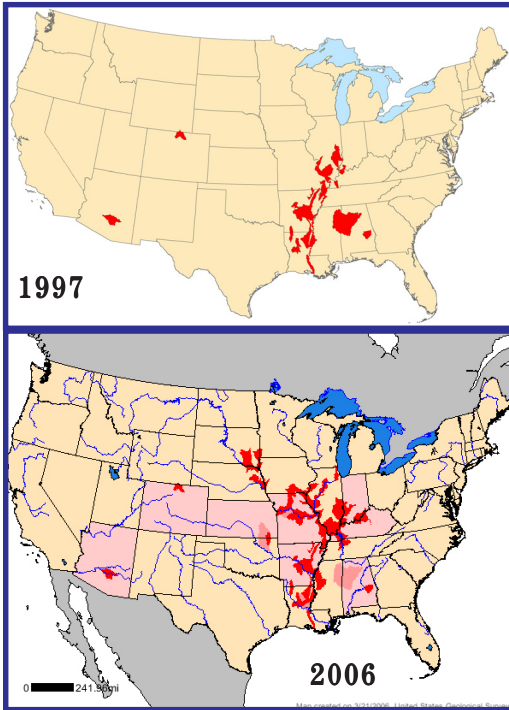
Grass Carp Distribution

(Light red represents non-reproducing distribution)

(Dark red represents where reproduction has been documented)

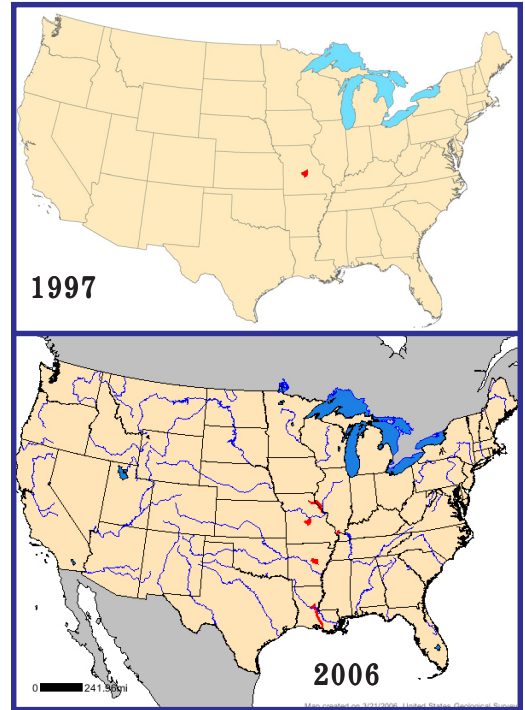


Bighead Carp Distribution



Silver Carp Distribution

-USGS images



Black Carp Distribution