



Management and Control of Asian Carps in the United States

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Asian Carp Working Group, Chair

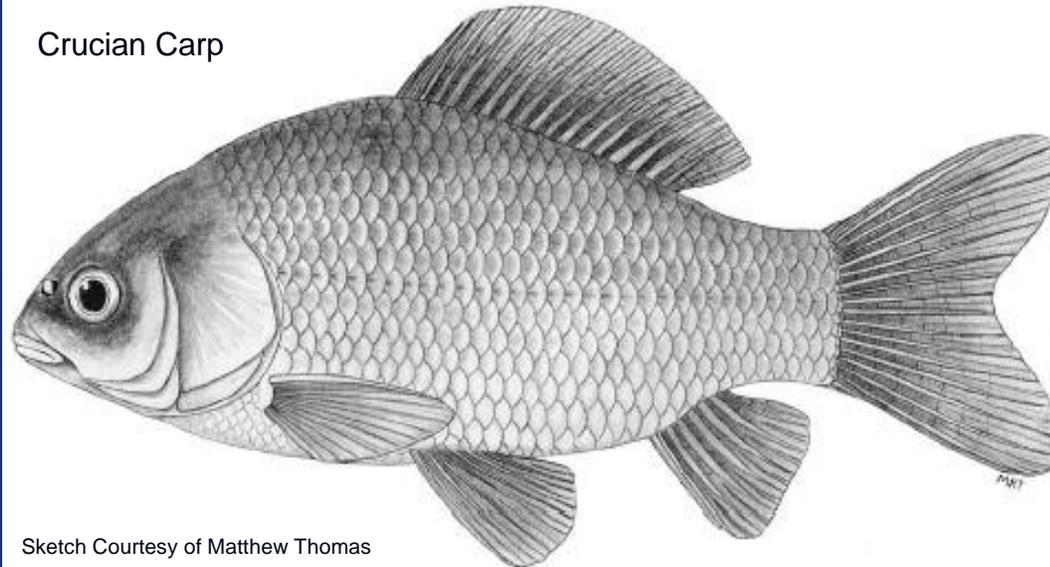
USFWS, Cartersville FRO



'Asian Carp'

- 7 carps native to Asia introduced into U.S.
 - Asian carps = bighead, black, grass, silver carps
 - Goldfish (1600's), Common carp (1800's)
 - Crucian carp (1900's) – Chicago, Illinois

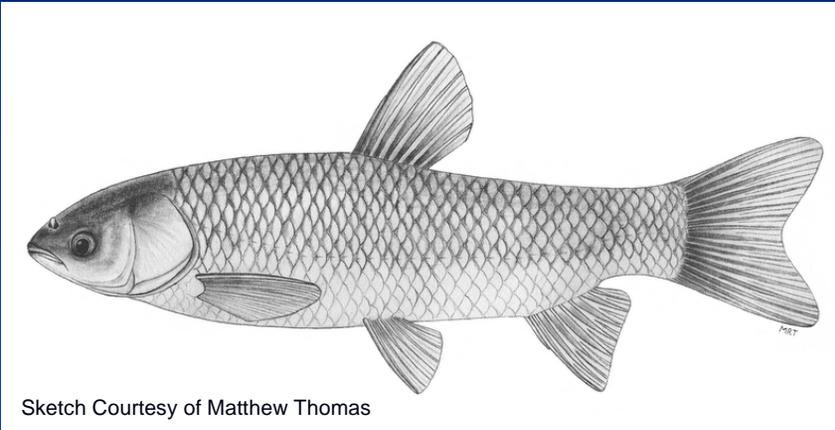
Crucian Carp



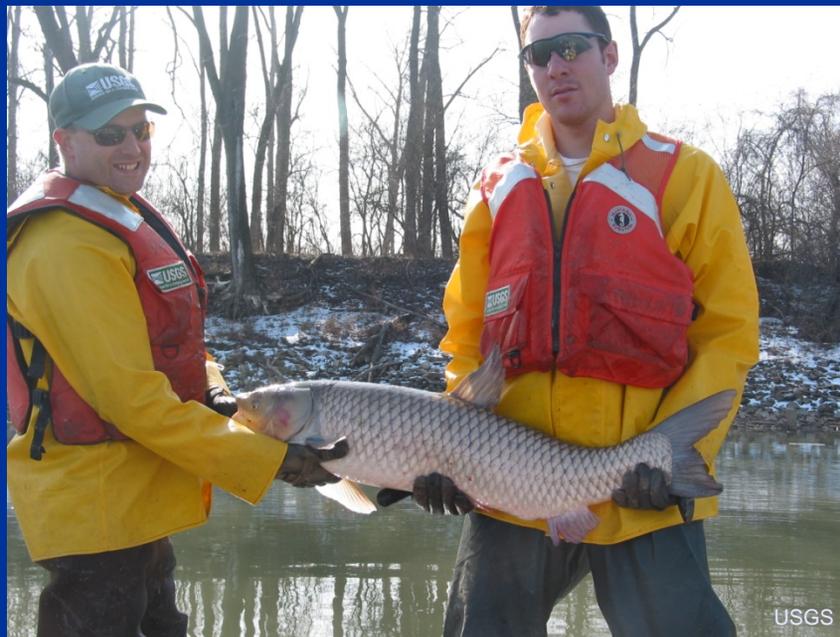
Sketch Courtesy of Matthew Thomas



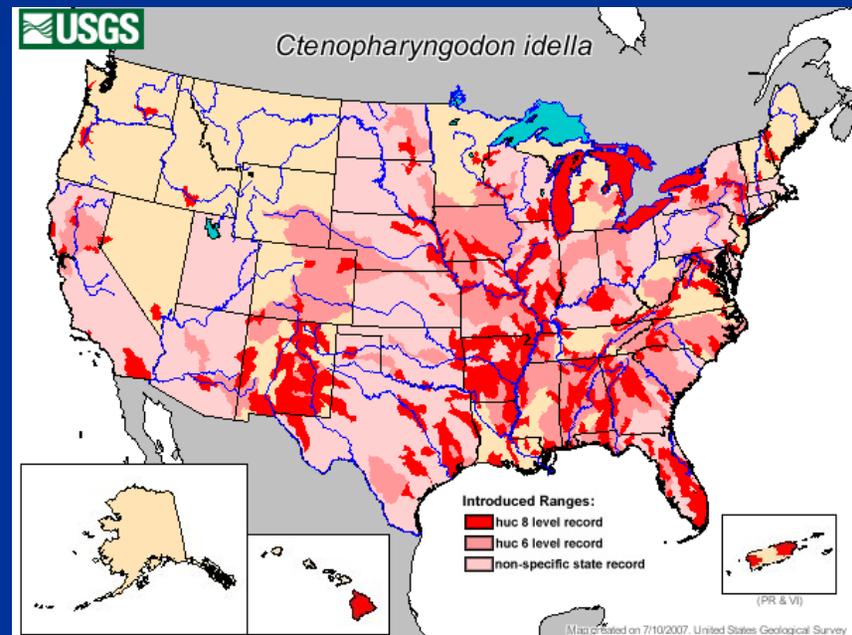
Grass Carp



Sketch Courtesy of Matthew Thomas



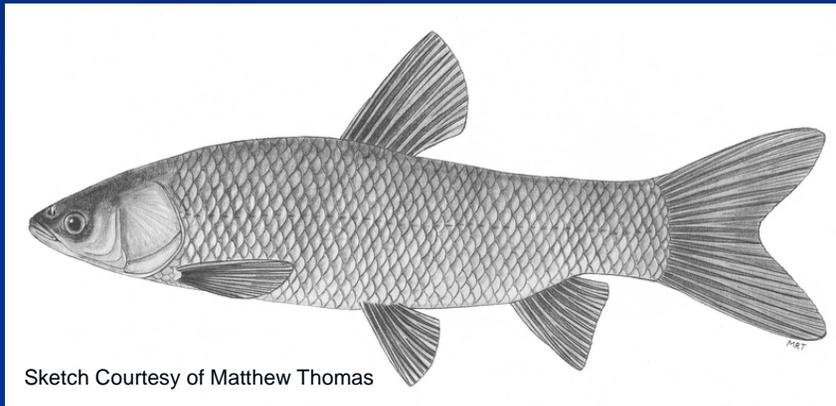
USGS



- Aquatic vegetation control
- Live food fish markets



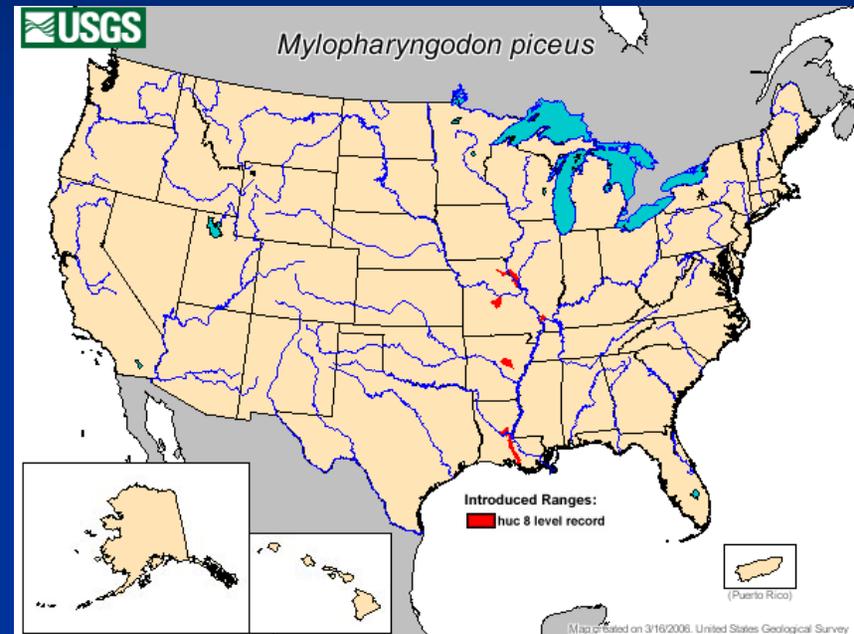
Black Carp



Sketch Courtesy of Matthew Thomas



USFWS



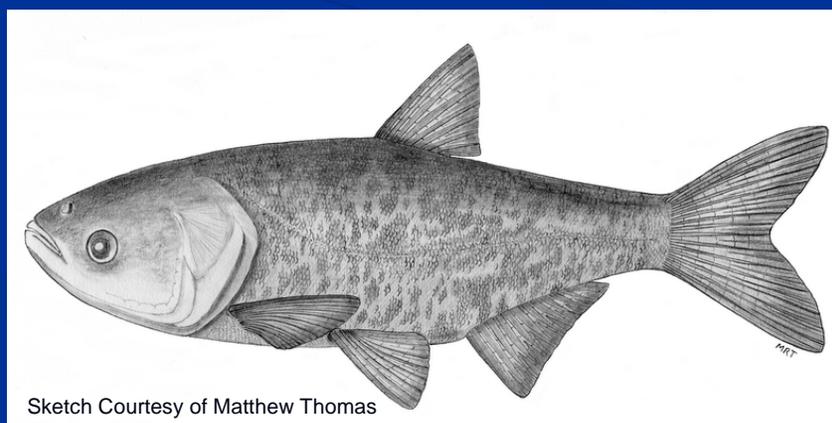
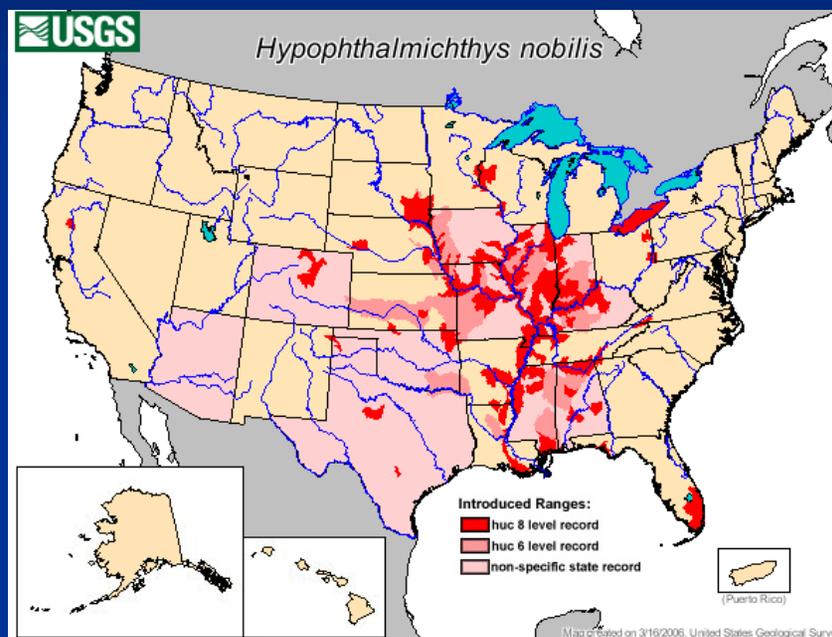
- Horseshoe Lake, Alexander County (2001)
- Mississippi River, below Lock and Dam 22 (2004)



Bighead Carp



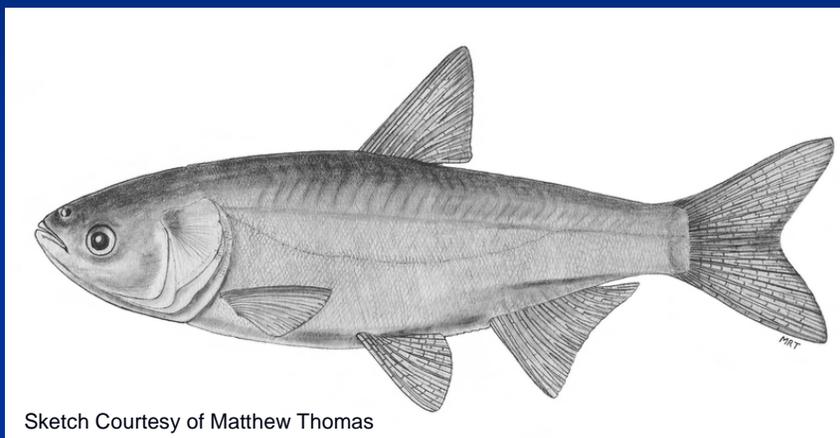
- Live food fish markets



Sketch Courtesy of Matthew Thomas



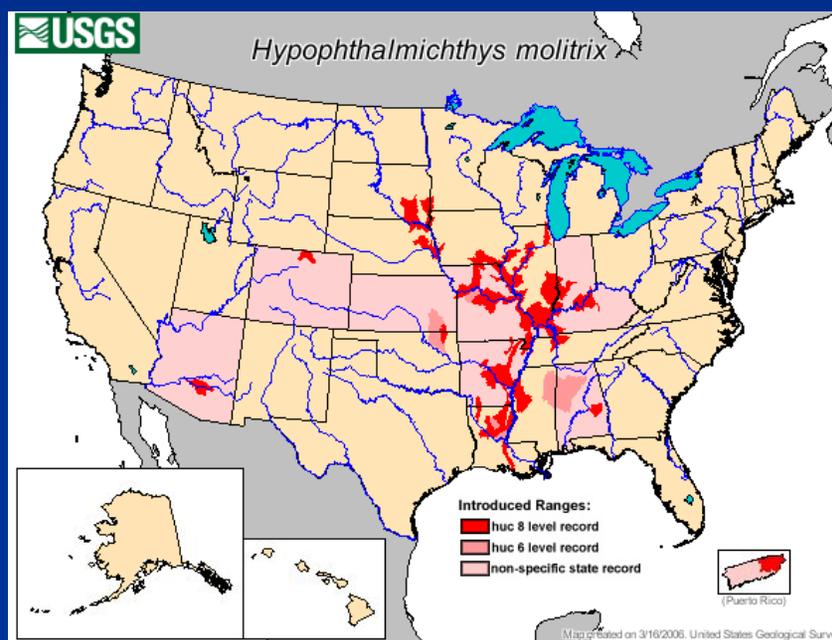
Silver Carp



Sketch Courtesy of Matthew Thomas



USFWS



- Injurious Wildlife – Lacey Act (8/2007)



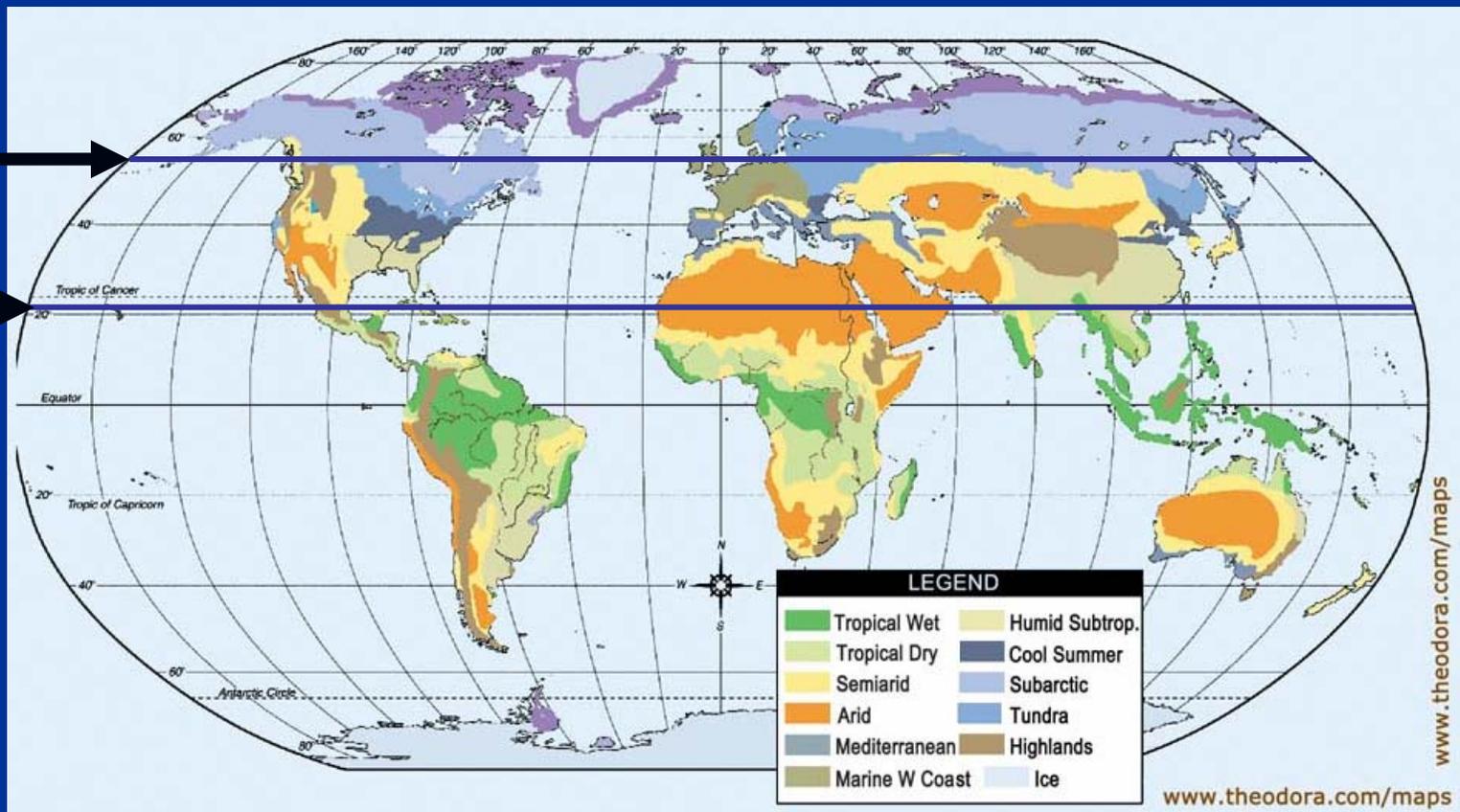
Invasive Species

The life history traits of all four of these species indicates that, where established, these four species have a high probability of being considered a nuisance; that is, they are likely to cause adverse ecological and economic effects.



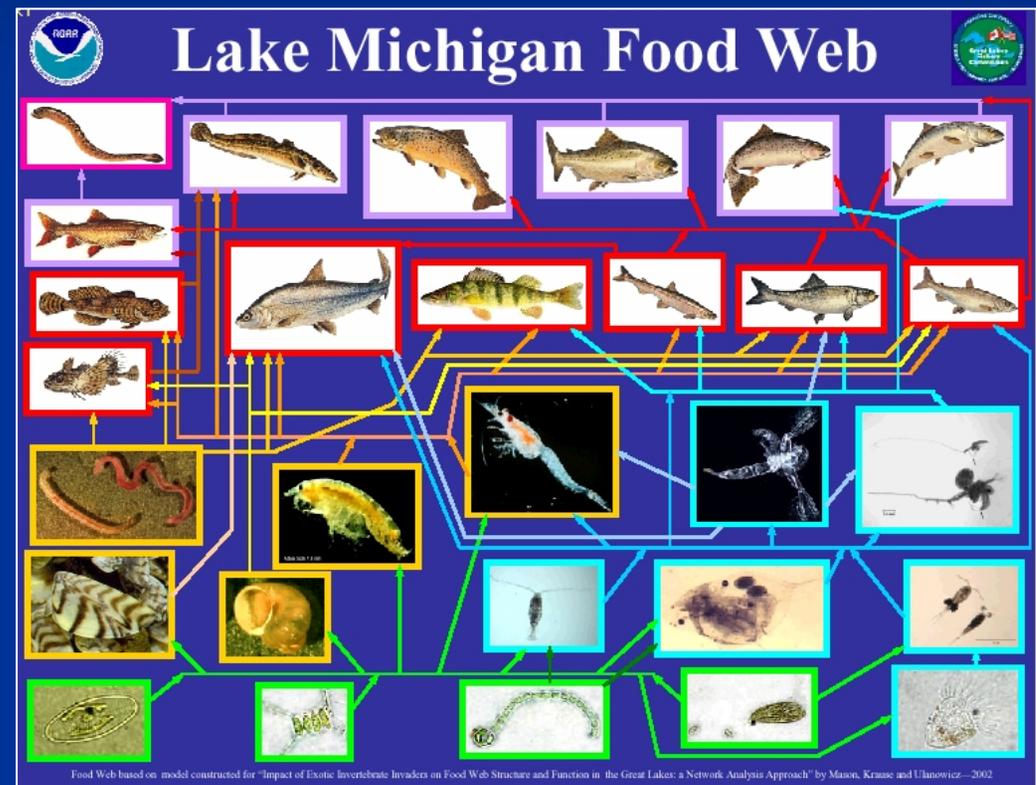
Nuisance Species

- Broad climate tolerance



Big Fish with Big Appetites

- Bighead carp
 - ~ 5 feet, 90 pounds
- Silver carp
 - > 3 feet, 60 pounds
- Specialized filter feeders – plankton
- No stomach = feed continuously
- Quickly grow too large for predators





Population Explosion

- Reproduce quickly
 - Sexually mature in 2-3 years
 - Mature female = 1-5 million eggs
- Dominate fish assemblages



Bill Dance

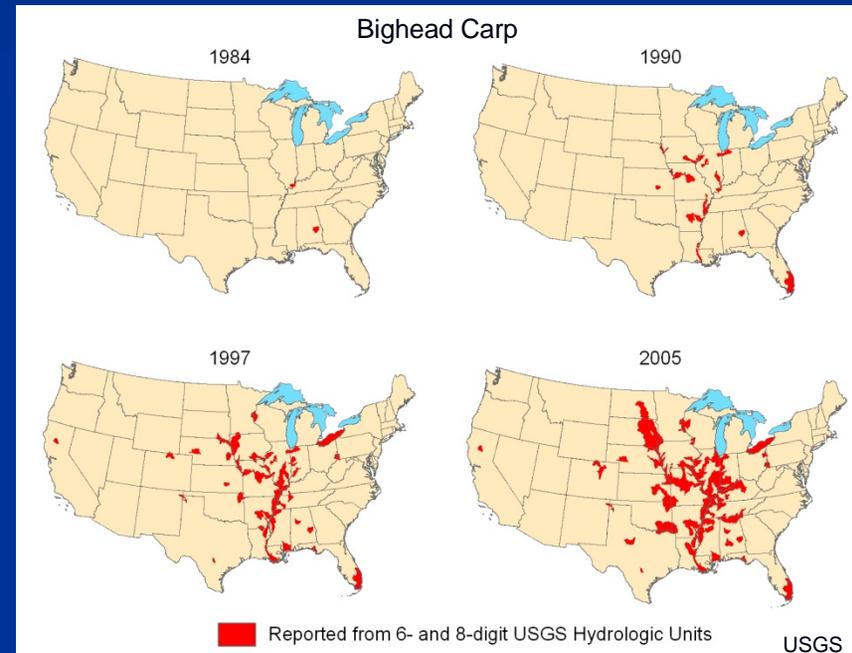


Sarah Bauer



Rapidly Dispersing

- Strong swimmers
 - Bighead and silver carp in the Illinois River
40 miles / day
- Collected within 21 miles of the dispersal barrier and 50 miles of the Great Lakes





Potential Negative Effects

- Crowd out native fishes
- Eat the same food that natives depend on
 - All juvenile fish, several adult fish, & mussels
 - Compete for limited resources
- Potential to alter food webs
 - Result = fewer and smaller native
 - Lower quality sport and commercial fisheries
- Personal injury and property damages



Commercial Harvest

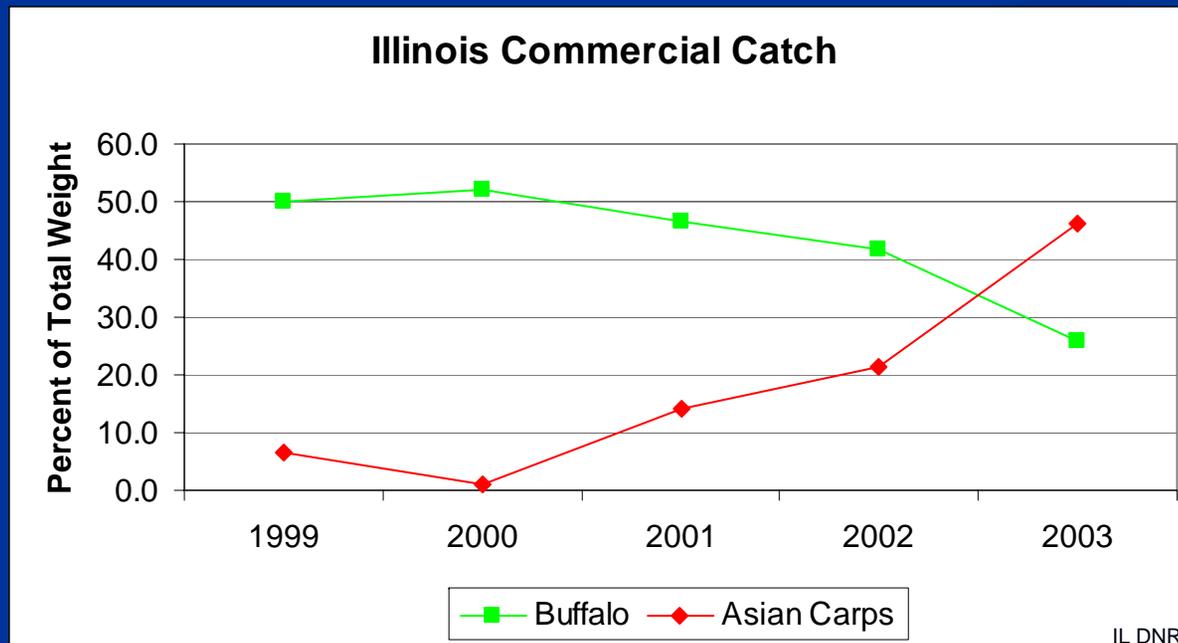
- Report increasing numbers of Asian carps in Mississippi and Illinois rivers
- 5-6 tons in a single day
- Few markets – quickly saturated
- Fishers abandoning traditional sites





Illinois River - 2003 Commercial Harvest

- Buffalo decreased 35% (pounds)
- Asian carp increased 124% (pounds)
- “at least in part do to competition with increasing numbers of Asian carps”





What about the Great Lakes?

- Asian carp = High risk chance
 - Cannot be certain about specific effects
 - Do know there is incredible potential
- Multi-billion dollar fisheries and economies at stake
 - Could affect salmon fishery and delay trout restoration
- Statistical modeling predicted that silver carp could become established
- 22 tributary rivers identified that could potentially serve as spawning sites
 - Potential impacts to entire Great Lakes drainage



Asian Carps = Invasive Species

- Invasive species degrade basin ecosystems and the economies they support
- Economic health dependant upon healthy ecosystems
- Effect how we enjoy and utilize the outdoors
 - Recreation
 - Business
- Management actions are warranted





National Management Plan

- Asian Carp Working Group
- Goals:
 - Prevent introductions
 - Limit dispersal
 - Extirpate or reduce population abundances
- 48 strategies and 136 recommendations



Prevention

- Human mediated activities
- Primarily an issue for interior waters and Great Lakes
- 4 highest risk pathways
 - Baitfish transport
 - Transport of wild-caught fish
- Regulations & Outreach





Containment

- Natural ability of fish to disperse
- Immediate actions necessary to limit spread and minimize affected waters
- 6 strategies
 - Prevent interbasin transfers and limit intrabasin movements
 - Forecast, detect, and rapidly respond to new introductions or range expansions



Dispersal Barriers

- Prevent interbasin transfers and limit intrabasin movements
 - Barriers – specifically identifies need for redundant barrier systems in Chicago Sanitary and Ship Canal
 - Canals, waterways, and water diversions
 - Permanent and temporary connections
 - Des Plaines River and Deep Run Creek





Surveillance & Early Detection

- Forecast, detect, and rapid response
 - High risk locations and waters of special concern
 - Early detection monitoring
 - Develop rapid response plans





Sonic Telemetry Project

- Difficult to detect with traditional sampling methods, especially when low abundance
- Network of acoustic receivers
 - 12 stationary receivers
 - 60 mile reach immediately below dispersal barrier
 - 30 surgically implanted transmitters (2 year life)
 - Continuous monitoring





Distribution in the Illinois River

- Starved Rock
 - Established and abundant populations
- Marseilles and Dresden Island
 - Low numbers of bighead and silver carp confirmed
- Brandon Road
 - At least one undocumented report

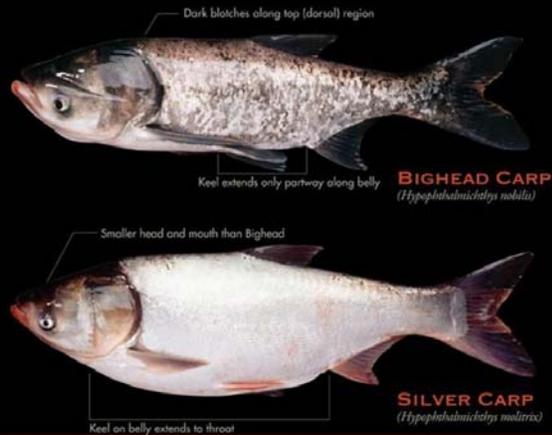




Report New Sightings!

BIGHEAD AND SILVER CARP WATCH

Bighead and silver carp are invasive fish spreading within the Mississippi and Missouri Rivers and Great Lakes regions causing harm to native fish and wildlife.



REPORT NEW SIGHTINGS

- 1) Note the exact location
- 2) Take pictures or freeze in plastic bag
- 3) Call 1-877-STOP-ANS

CAUTION: Young Asian carp look very similar to native bait fish. **NEVER** move bait from one body of water to another.





Population Control

- **Integrated Pest Management**
 - **Great Lakes Sea Lamprey Control Program**
- **8 potential tools**
 - **Harvest enhancement**
 - **Biological controls**
 - **Sterile Asian carps**
 - **Transgenic Asian carps**
 - **Pheromones**
 - **Habitat or hydrologic modifications**
 - **Piscicides**



Harvest Enhancement

- Only near-term tool
- Important component of integrated control
- Sport harvest
 - Small, localized benefits
- Commercial harvest
 - Very limited market demand → minimal harvest
 - Risks to consider
 - Demand for sustainable fishery
 - Incentive to stock new waters
 - Sufficient risk to prohibit harvest of other AIS



More Questions Than Answers

- In addition to need for:
 - Developing and enforcing regulations
 - Implementing effective containment measures
 - Developing control tools and IPM program
- Many additional research needs:
 - Understand basic life history
 - Understand, quantify, and predict impacts
 - Accurately /precisely assess stocks
 - Evaluate and modify management actions



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