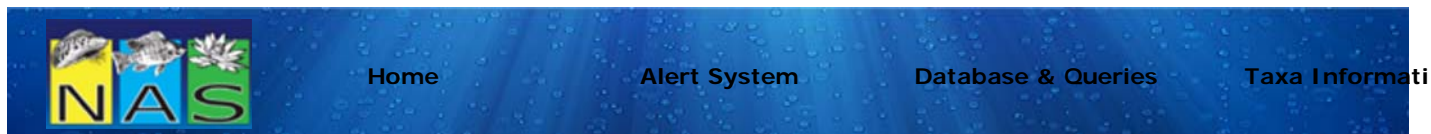




## NAS - Nonindigenous Aquatic Species



***Hypophthalmichthys molitrix*** **Collection Info**

(silver carp)

Fishes

Exotic to United States

**HUC Maps**

**Point Maps**

**Fact Sheet**



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### ***Hypophthalmichthys molitrix* (Valenciennes 1844)**

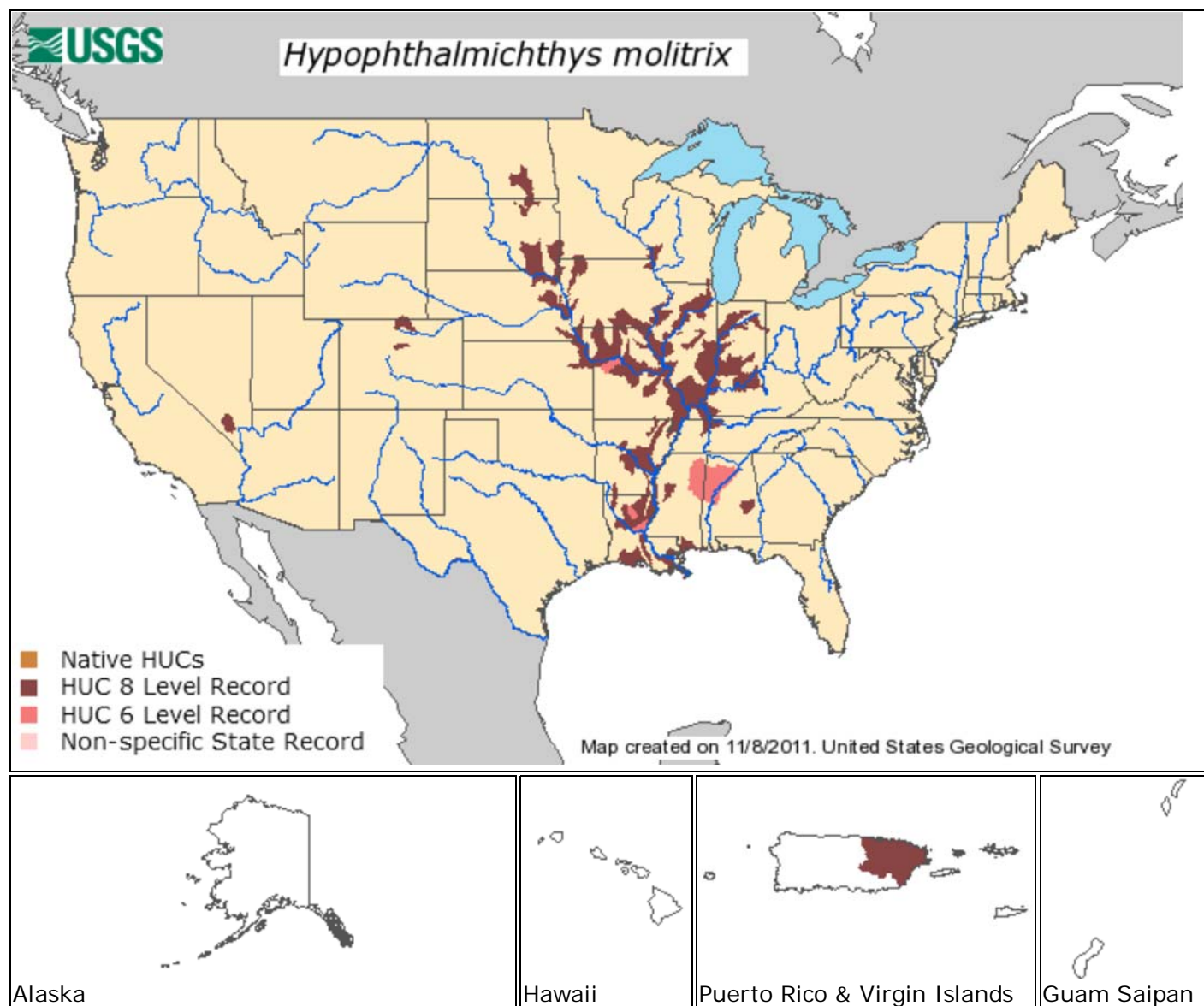
**Common name:** silver carp

**Taxonomy:** available through ITIS

**Identification:** Distinguishing characteristics were given in Berg (1949). Keys that include this species and photographs or illustrations are provided in several of the more recently published state and regional fish books (e.g., Robison and Buchanan 1988; Etnier and Starnes 1993; Pflieger 1997).

**Size:** 1 m and 27 kg.

**Native Range:** Several major Pacific drainages in eastern Asia from the Amur River of far eastern Russia south through much of eastern half of China to Pearl River, possibly including northern Vietnam (Berg 1949; Li and Fang 1990).



Interactive maps: [Point Distribution Maps](#)

**Nonindigenous Occurrences:** This species has been recorded from the Black Warrior and Tallapoosa river drainages of the Mobile Basin, including Yates Reservoir and throughout the central part of **Alabama** (Mettee et al. 1996; J. Hornsby and M. Pierson, personal communication; Rasmussen 1998); and from the **Arkansas** and White River systems (including the the lower Cache River), the Ouachita River, Bayou Meto Drainage, and the Mississippi River mainstem in Arkansas (Freeze and Henderson 1982; Carter and Beadles 1983; Courtenay et al. 1984; Robison and Buchanan 1988). It has been stocked in water treatment ponds on the East Slope of **Colorado** (D. Horak, personal communication). A specimen was collected in power plant reservoir in Larimer Co.; plant is on Rawhide Creek; a trib of the Cache la Poudre River (Walker, unpublished). It has been intentionally released in **Hawaii** (Davidson et

al. 1992). It has also been collected or reported from several water bodies in, or bordering, **Illinois**, including the Mississippi, Spoon, Illinois, and Ohio rivers and several of their tributaries, the Muddy River, Muscooten Bay, Horseshoe Lake and vicinity in the Cache River drainage (Burr 1991; Burr et al. 1996; Laird and Page 1996; Illinois Natural History Survey 2004; Hoff, pers. comm.; Etnier, pers. comm.; Thomas, pers. comm.; Irons, pers. comm.; Southern Illinois University, unpublished) and the Embarras River below Lake Charleston (K. Cummings, personal communication). There are also records of this species from the southeastern part of **Indiana** (presumably the Ohio River) (Courtenay et al. 1991; Simon et al. 1992) and west fork of the White River in Greene County (Anonymous 2003); the Des Moines and Chariton Rivers, **Iowa** (Iowa DNR 2003), White River at Hazelton (Caskey, pers. comm.) and the Wabash River (Thomas, pers. comm.); eastern rivers in **Kansas** and some unspecified location(s) in Kansas (Rasmussen 1998; Courtenay et al. 1991) (possibly the Missouri River); from the Ohio River, Clarks River, and non-specific locations in **Kentucky** (Pearson and Krumholz 1984; Burr and Warren 1986; Rasmussen 1998; Thomas, pers. comm.; Henley, pers. comm.; Southern Illinois University; Baxter, pers. comm.); from the lower Mississippi River and many tributary sites in **Louisiana** including the Atchafalaya, Red, Boeuf, Old, Ouachita, and Little river drainages, LaFourche Canal, Miller Lake, and Loggy Bayou (Freeze and Henderson 1982; Carp Task Force 1989; Douglas et al. 1996; Rasmussen 1998; F. Bryan and J. Hughes Little, pers. comm.); the Mississippi River, Yazoo River, and Chotard Lake in **Mississippi** (Mississippi Museum of Natural Science 2004; Schramm et al. 2004); from the Mississippi and Missouri river mainstems and the Lamine and Castor Rivers, **Missouri** (Courtenay et al. 1991; Robison 1995; Pflieger 1997; Rasmussen 1998; Lien 2003), the Little River Ditches, Upper Mississippi-Cape Girardeau, and The Sny drainages (Southern Illinois University), the Lower Missouri-Moreau, Lower Grand, Lamine, Lower Osage drainages (Chapman, pers. comm.); the Missouri River drainage and Elkhorn River **Nebraska** (Nebraska Game and Parks 2000) and established in Boyer Chute National Wildlife Refuge (USFWS 2005); the Missouri River up to Gavins Point Dam (W. Stancill, pers. comm.), the Big Sioux River near Canton (T. St. Sauver, pers. comm.), and the mouth of the James River (R. Klumb, pers. comm.) in **South Dakota**. They also have been collected from a Mississippi River outflow in **Tennessee** (C. Saylor, personal communication; Etnier, pers. comm.) and McKellar Lake in Memphis (Baxter, pers. comm.).

This species has also been collected at golf course ponds at Dorado Beach Hotel in **Puerto Rico** (Erdman 1984).

**Means of Introduction:** This species was imported and stocked for phytoplankton control in eutrophic water bodies and also apparently as a food fish. It was first brought into the United States in 1973 when a private fish farmer imported silver carp into Arkansas (Freeze and Henderson 1982). By the mid 1970s the silver carp was being raised at six state, federal, and private facilities, and by the late 1970s it had been stocked in several municipal sewage lagoons (Robison and Buchanan 1988). By 1980 the species was discovered in natural waters, probably a result of escapes from fish hatcheries and other types of aquaculture facilities (Freeze and Henderson 1982). The occurrence of silver carp in the Ouachita River of the Red River system in Louisiana was likely the result of an escape from an aquaculture facility upstream in Arkansas (Freeze and Henderson 1982). The Florida introduction was probably a result of stock contamination, a silver carp having been inadvertently released with a stock of grass carp being used for aquatic plant control (Middlemas 1994). In a similar case, the species was apparently introduced accidentally to an Arizona lake as part of an intentional, albeit illegal, stock of diploid grass carp (W. Silvey, personal communication). Pearson and Krumholz (1984) suggested that individuals taken from the Ohio River may have come from plantings in local ponds or entered the Ohio River from populations originally introduced in Arkansas.

**Status:** Records are available for 12 states. It is apparently established in Louisiana (Douglas et al. 1996) and is possibly established in Illinois; silver carp have been reported in Alabama, Arizona, Arkansas, Colorado, Florida, Indiana, Kansas, Kentucky, Missouri, and Tennessee. Douglas et al. (1996) collected more than 1600 larvae of this genus from a backwater outlet of the Black River in Louisiana in 1994. Burr et al. (1996) found young-of-the-year in a ditch near Horseshoe Lake and reported this as the first evidence of successful spawning of silver carp in Illinois waters and the United States. They felt that the species would be 'established' in the state within the next ten years. Based on the occurrence of juvenile fish in Illinois waters, Pflieger (1997) felt that successful spawning of silver carp in Missouri seems inevitable. In the early 1980s commercial fishermen in Arkansas had caught 166 silver carp from seven different sites; however, during an intensive 1980-1981 survey to determine the distribution and

status of bighead and silver carp in state open waters, Arkansas Game and Fish Commission personnel were unsuccessful in procuring any additional specimens (Freeze and Henderson 1982). Although Arkansas state personnel did not find young-of-the-year fish, several specimens taken by the commercial fishermen were sexually mature and exhibited secondary sexual characteristics (Freeze and Henderson 1982). Nevertheless, Robison and Buchanan (1988) reported that there was still no evidence of natural reproduction in Arkansas waters. Rinne (1995) listed silver carp as introduced to Arizona in 1972 and denoted it as established. Apparently in reference to the same record, William Silvey of the Arizona Game and Fish Department recently informed us that the only silver carp documented in Arizona open waters was a population inhabiting an urban lake in Chandler during the early 1970s. However, further investigation has shown that it was most likely a bighead x grass carp hybrid population (P. Marsh, pers.comm.). That population, along with a large population of diploid grass carp, was exterminated in 1975 or 1976 by personnel from the Arizona Game and Fish Department and Arizona State University (W. Silvey, personal communication). Pearson and Krumholz (1984) documented records from the Ohio River, but they did not include it as one of the species that exist in well-established, reproducing populations. Etnier and Starnes (1993) provided information on silver carp, but by publication they were unaware of any records of the species in the state of Tennessee.

**Impact of Introduction:** Pflieger (1997) considered the impact of this species difficult to predict because of its place in the food web. In numbers, the silver carp has the potential to cause enormous damage to native species because it feeds on plankton required by larval fish and native mussels (Laird and Page 1996). This species would also be a potential competitor with adults of some native fishes, for instance, gizzard shad, that also rely on plankton for food (Pflieger 1997). A study by Sampson et al. (2008) found that Asian carp (silver and bighead carps) had dietary overlap with gizzard shad and bigmouth buffalo, but not much of one with paddlefish.

**Remarks:** Jenkins and Burkhead (1994) reported on the use of silver carp in a wastewater treatment pond in the upper James River drainage of Virginia. However, there is as yet no record of the species in Virginia open waters. One of the so-called Chinese carps, the silver carp is a filter-feeder capable of taking large amounts of phytoplankton. Its diet also includes zooplankton, bacteria, and detritus (Leventer 1987). This species has been intensively cultured in many parts of the world, often raised in combination with other fishes.

The report in Fuller et al. (1999) from Bay County, Florida was actually a bighead carp (UF 98162).

Voucher specimens: Illinois (SIUC 17716, 23043, 23046, 24415; INHS 88425); Louisiana (NLU 65811, 66858, 66859).

### References

Anonymous. 2003. West Fork of the White River yields exotic fish entry. Wild Bulletin. Available at URL [http://www.in.gov/dnr/fishwild/recordfish/recordfish\\_list.htm](http://www.in.gov/dnr/fishwild/recordfish/recordfish_list.htm).

Berg, L. S. 1948-1949. Freshwater fishes of the U.S.S.R. and adjacent countries, 4th edition. Three volumes. Translated from Russian, 1962-1965, for the Smithsonian Institution and the National Science Foundation, by Israel Program for Scientific Translations, Jerusalem, Israel. Volume 1:504 pp.; volume 2:496 pp.; volume 3:510 pp.

Burr, B. M. 1991. The fishes of Illinois: an overview of a dynamic fauna. Proceedings of our living heritage symposium. Illinois Natural History Survey Bulletin 34(4):417-427.

Burr, B. M., D. J. Eisenhour, K. M. Cook, C. A. Taylor, G. L. Seegert, R. W. Sauer, and E. R. Atwood. 1996. Nonnative fishes in Illinois waters: What do the records reveal? Transactions of the Illinois State Academy of Science 89(1/2):73-91.

Burr, B. M., and M. L. Warren, Jr. 1986. A distributional atlas of Kentucky fishes. Kentucky Nature Preserves Commission Scientific and Technical Series 4. 398 pp.

Carp Task Force. 1989. Report to the Louisiana Legislature, March 1989. Three volumes. Louisiana Department of Wildlife and Fisheries, Baton Rouge, LA. 35 pp.

Carter, F. A., and J. K. Beadles. 1983. Range extension of the silver carp, *Hypophthalmichthys molitrix*. Proceedings of the Arkansas Academy of Science 37:80.

Courtenay, W. R., Jr., D. A. Hensley, J. N. Taylor, and J. A. McCann. 1984. Distribution of exotic fishes in the continental United States. Pages 41-77 in W. R. Courtenay, Jr., and J. R. Stauffer, Jr., editors. Distribution, biology and management of exotic fishes. Johns Hopkins University Press, Baltimore, 430 pp.

Courtenay, W. R., Jr., D. P. Jennings, and J. D. Williams. 1991. Appendix 2: exotic fishes. Pages 97-107 in Robins, C. R., R. M. Bailey, C. E. Bond, J. R. Brooker, E. A. Lachner, R. N. Lea, and W. B. Scott. Common and scientific names of fishes from the United States and Canada, 5th edition. American Fisheries Society Special Publication 20. American Fisheries Society, Bethesda, Maryland.

Davidson, J. R., J. A. Brock, L. G. L. Young. 1992. Introduction of exotic species for aquaculture purposes. Page 83-101 in Rosenfield, A. and Mann, R. (eds.). Dispersal of Living Organisms into Aquatic Ecosystems, Maryland Sea Grant, College Park, Maryland, 471 pp.

Douglas, N. H., S. G. George, J. J. Hoover, K. J. Killgore, and W. T. Slack. 1996. Records of two Asian carps in the lower Mississippi Basin. Page 127 in Abstracts of the 76th Annual Meeting of the American Society of Ichthyologists and Herpetologists, University of New Orleans, New Orleans, LA.

Erdman, D. S. 1984. Exotic fishes in Puerto Rico. Pages 162-176 in Courtenay, Jr., W. R. and J. R. Stauffer, Jr. (eds.), Distribution, Biology, and Management of Exotic Fishes, The Johns Hopkins University Press, Baltimore, 430 pp.

Etnier, D. A., and W. C. Starnes. 1993. The fishes of Tennessee. University of Tennessee Press, Knoxville, Tennessee, 681 pp.

Freeze, M., and S. Henderson. 1982. Distribution and status of the bighead carp and silver carp in Arkansas. North American Journal of Fisheries Management 2(2):197-200.

Iowa DNR. 2003. Non native fish species found in Iowa interior streams. <http://www.iowadnr.com/news/03aug/nonnative.html>. Iowa DNR.

Jenkins, R. E., and N. M. Burkhead. 1994. Freshwater fishes of Virginia. American Fisheries Society, Bethesda, Maryland, 1079 pp.

Laird, C. A., and L. M. Page. 1996. Non-native fishes inhabiting the streams and lakes of Illinois. Illinois Natural History Survey Bulletin 35(1):1-51.

Leventer, H. 1987. The contribution of silver carp *Hypophthalmichthys molitrix* to the biological control of reservoirs. Mikoroth Water Company, Israel. 106 pp.

Li, S., and F. Fang. 1990. On the geographical distribution of the four kinds of pond-cultured carps in China. Acta Zoologica Sinica 36(3):244-250.

Lien, D. 2003. Asian carp pose formidable threat to Midwest waters. Knight Ridder Newspapers. November 26, 2003.

Mettee, M. F., P. E. O'Neil, and J. M. Pierson. 1996. Fishes of Alabama and the Mobile Basin. Oxmoor House, Inc. Birmingham, AL. 820 pp.

Middlemas, K. 1994. Local angler hooks a peculiarity. The News Herald, Panama City, Florida, 25 September 1994.

Mississippi Museum of Natural Science. 2003. MMNS Nonindigenous Fish Records.

Nebraska Game and Parks. 2000. The Fishes of Nebraska. <http://www.ngpc.state.ne.us/fish/fishes.html>.

Pearson, W. D., and L. A. Krumholz. 1984. Distribution and status of Ohio River fishes. ORNL/sub/79-7831/1. Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Pflieger, W. L. 1997. The fishes of Missouri. Missouri Department of Conservation, Jefferson City, MO. 372 pp.

Rasmussen, J.L. 1998. Aquatic nuisance species of the Mississippi River basin. 60th Midwest Fish and Wildlife Conference, Aquatic Nuisance Species Symposium, Dec. 7, 1998, Cincinnati, OH.

Rinne, J. N. 1995. The effects of introduced fishes on native fishes: Arizona, southwestern United States. Pages 149-159 in D. P. Philipp, J. M. Epifanio, J. E. Marsden, and J. E. Claussen, editors. Protection of Aquatic Biodiversity. Proceedings of the World Fisheries Congress, Theme 3. Science Publishers Inc., Lebanon, NH.

Robison, H. W., and T. M. Buchanan. 1988. Fishes of Arkansas. University of Arkansas Press, Fayetteville, Arkansas, 536 pp.

Sampson, S.J., J.H. Chick, and M.A. Pegg. 2009. Diet overlap among two Asian carp and three native fishes in backwater lakes on the Illinois and Mississippi rivers. *Biological Invasions*. 11:483-496

Schramm, H. L., Jr. and M. C. Basler. 2004. Evaluation of capture methods and distribution of black carp in Mississippi. Mississippi State University. 12 pp.

Simon, T. P., J. O. Whitaker, Jr., J. S. Castrale, and S. A. Minton. 1992. Checklist of the vertebrates of Indiana. *Proceedings of the Indiana Academy of Science* 101:95-126.

#### **Other Resources:**

[Facts About Bighead and Silver Carp](#) (USGS - Columbia, Missouri)

[Asian Carp Workgroup](#)

[Proceedings of the Asian Carp Working Group Meeting, May 24, 2004, Columbia, Missouri](#)

[NOAA Sea Grant Nonindigenous Species Site \(SGNIS\)](#)

[Risk Assessment for Asian Carps in Canada \(CSAS\)](#)

[Pennsylvania Sea Grant Factsheet](#)

[Global Invasive Species Database Factsheet](#)

[FishBase Fact Sheet](#)

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**Revision Date:** 1/11/2011

#### **Citation Information:**

Leo Nico. 2012. *Hypophthalmichthys molitrix*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL.

http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=549 RevisionDate: 1/11/2011



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Page Last Modified: Aug 19, 2009