

*Hypophthalmichthys nobilis* 正體中文

**System:** Freshwater

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Actinopterygii	Cypriniformes	Cyprinidae

**Common name** fa lin (English, Hong Kong), belli-gende (English, India), bighead (English, Russian Fed), big head (English), ballgjeri laraman (English, Albania), marmarokyprinos (English, Greece), kapoor-e-sargondeh (English, Iran), kokuren (English, Japan), kap kepala besar (English, Malaysia), gefleckter silberkarpfen (English, Germany), marmorkarpe (English, Denmark), marmoripaksuotsa (English, Finland), Hak lin (English, Hong Kong), amour marbré (English, France), tolstolebec pestrý (English, Czech Rep), tolstolob pestrý (English, Slovakia), tolypyga pstra (English, Poland), marmorkarpfen (English, Germany), grootkopkarper (English, Netherlands), pla song heu (English, Thailand), bighead carp (English), sung ue (English, Hong Kong), pla song hea (English, Thailand), tongsan (English, Malaysia), dai tau (English, Hong Kong), tovstolob strokatyi (English, Ukraine), marmorkarp (English, Sweden), piestryi tolstolobik (English, Ukraine), tolstolobik pestrý (English, Czech Rep), pestryi tolstolob (English, Russian Fed), pastar tolstolob (English, Bulgaria), novac (English, Romania), boon tau ue (English, Hong Kong), crap argintiu nobil (English, Romania), pla tao teo (English, Thailand), carpa cabazona (English, Mexico), carpa cabeza grande (English, Ecuador), carpa dalla testa grande (English, Italy), carpe chinoise (English, France), carpe marbrée (English, France), carpe à grosse tête (English, France), cá mè hoa (English, Viet Nam), amour à grosse tête (English, France)

**Synonym** *Leuciscus nobilis* , Richardson, 1845  
*Aristichthys nobilis* , (Richardson, 1845)  
*Hypophthalmichthys mantschuricus* , Kner, 1867

**Similar species** *Hypophthalmichthys molitrix*

**Summary** *Hypophthalmichthys nobilis* commonly known as bighead carp are native to Asia. They have been introduced around the world for aquaculture purposes. They are also used to control excessive growths of phytoplankton in natural waters. These species have the potential to reduce native diversity by competing for and depleting zooplankton populations thus altering the food web. *H. nobilis* have also been found to carry and transmit various diseases. *H. nobilis* is also known by its synonym *Aristichthys nobilis*.



[view this species on IUCN Red List](#)

## Species Description

*Hypophthalmichthys nobilis* are deep-bodied, laterally compressed fish with big heads, hence the name bighead carp. FIGIS (2005) states that the length of the head is larger than body height and the mouth slants upwards and the lower jaw extends slightly over upper jaw. Their scales are very small. There are approximately 85-100 scales in the lateral line, and 26-28 scale rows above the lateral line. The fins of small specimens lack spines. Large specimens have a heavy, stiff, non-serrate spine at the origin of the dorsal fin and a slightly stiffened spine at the anal fin origin. The dorsal fin has eight (rarely nine) soft rays, the anal fin has thirteen (rarely fourteen) soft rays. The gill rakers are long, comb like and close-set, not fused into a porous plate. The pharyngeal teeth count is 4-4 (The Gulf States Marine Fisheries Commission, 2003).

## Notes

When directly quoting, the species name/synonym used in literature has been maintained. Recent research has shown that certain cultural practices are also confounding carp management. Higbee *et al.* (2004) state that, "It has been discovered that an increasing population within the Great Lakes region uses live invasive fish for religious and cultural purposes. Asian carp, such as *H. nobilis*, have been discovered in public ponds and lagoons in the Great Lakes region, and media stories indicate that these fish are being intentionally released as part of a religious ceremony. The hojo-e ceremony of releasing living beings into the wild is a ritual performed in a number of Buddhist countries, particularly in Eastern Asia. The ritual, developed in Japan, is based on the principle of compassionate action toward animals to accrue merit for the afterlife. Followers of this tradition believe that performing good deeds such as releasing captive animals will lengthen their own life span. Although this practice occurs in the United States (where it is common to release goldfish, turtles, and birds), this ritual is usually performed in a pond at a Buddhist temple under the guidance of a monk. In the Czech Republic, it is tradition to keep a live carp in the bathtub for a few days before a Christmas feast. It has been found that some people buy two; one to eat, and one to release into a river".

## Uses

Stone *et al.* (2000) state that, "In worldwide aquaculture, *Aristichthys nobilis* ranks fourth in production (2.8 billion pounds in 1995)". Elvira (2001) reports that, "A. *nobilis* have been widely introduced specifically to control excessive growths of phytoplankton in natural waters."

## Habitat Description

FIGIS (2005) states that, "*Aristichthys nobilis* is a eurythermic fish (an animal that can tolerate a wide range of temperatures), being able to tolerate water temperatures of 0.5-38°C. It inhabits lakes, rivers and reservoirs. This species normally dwell in the upper layer of the water column and prefers high fertility water with abundant natural food. "Stone *et al.* (2000) report that, "A. *nobilis* are native to large rivers and will not spawn in still waters or small streams. Although fish do mature in ponds and can be induced to spawn with hormone injections, they do not spawn naturally in still water."

## Reproduction

FIGIS (2005) states that, "*Aristichthys nobilis* is a synchronous and gonochoristic species that spawns annually for dozens of years during its life span. There is just one spawning season in a year, which takes place in early summer. A. *nobilis* is a semi-migratory fish. Broodstock migrate from lakes and the lower reaches of rivers to the spawning ground in the upper reaches of the major rivers in its native range. Flowing water and changes in water level are essential environmental stimuli for natural spawning. Semi-buoyant eggs are laid that suspend in the water column when there is a current. Individuals can reach sexual maturation in captivity but cannot spawn naturally under these conditions. Hormone injection and environmental stimuli such as flowing water are essential for induced spawning."

## Nutrition

Stone *et al.* (2000) state that, "The natural food of the bighead carp is zooplankton, along with larger phytoplankton. *H. nobilis* are filter feeders and use their fine, comb-like gill rakers to strain tiny animals and large algae from the water. If zooplankton are scarce, *H. nobilis* may feed on detritus (organic matter and associated bacteria that accumulate on the pond bottom). Pond bottom organisms are not a normal food item; in one study, *H. nobilis* were not found to have a significant impact on the benthic (pond bottom) community."

## General Impacts

Burr *et al.* (1996) state that, "The potential impact of *Hypophthalmichthys molitrix* and *H. nobilis* is not adequately known. Markets for these carp apparently have not become well established. Confusion over the correct identity of these species and the legality of taking this fish in commercial harvests has resulted in its consideration as a nuisance by some fishermen we have interviewed. It is believed these species negatively interact with certain natives but further research before conclusions are drawn."

USGS-NAS (2005) reports that, "Because bighead carp are planktivorous and attain a large size, Laird and Page (1996) suggested these carp have the potential to deplete zooplankton populations. A decline in the availability of plankton can lead to reductions in populations of native species that rely on plankton for food, including all larval fishes, some adult fishes, and native mussels." *H. nobilis* is also a carrier of several different fish diseases that can be spread through its escape and introduction (FIGIS, 2005).

## Management Info

Higbee *et al.* (2004) state that, "A regulatory approach of identifying legal responsibility and developing consistent regulations will be needed on a regional basis to prevent intentional or unintentional release of invasive species including carp such as *H. nobilis*. Managers, however, must also contend with the reality that the absence of adequate enforcement mechanisms compromises the effectiveness of these regulations."

Biological: Stone *et al.* (2000) report that, "Many states in the U.S. prohibit the introduction of *H. nobilis* or require a special permit for a bio-secure facility. Triploid *H. nobilis* (apparently sterile) have been produced and could be raised for market."

## Pathway

It is suspected that the live food fish industry could be a potential pathway for introducing *Hypophthalmichthys nobilis* into Great Lakes waters (Higbee *et al.* 2004).

**Principal source:** Higbee *et al.* 2004. The Live Food Fish Industry: New Challenges in Preventing the Introduction and Spread of Aquatic Invasive Species.

**Compiler:** National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG)

**Review:** Dr. Robert J. Radke Fish Ecologist Germany

**Publication date:** 2005-07-08

## ALIEN RANGE

[1] ALBANIA	[1] ALGERIA
[1] ARMENIA	[1] BELARUS
[1] BHUTAN	[1] BRAZIL
[1] BRUNEI DARUSSALAM	[1] BULGARIA
[1] CAMBODIA	[1] CASPIAN SEA
[1] COSTA RICA	[1] CROATIA
[1] CUBA	[1] CZECH REPUBLIC
[1] DANUBE RIVER (EX-YUGOSLAVIA)	[1] DENMARK

[1] DOMINICAN REPUBLIC	[1] EGYPT
[1] ESTONIA	[1] FIJI
[1] FRANCE	[1] GERMANY
[1] GREAT LAKES	[1] GREECE
[1] HONG KONG	[1] HUNGARY
[1] INDIA	[1] INDONESIA
[1] IRAN, ISLAMIC REPUBLIC OF	[1] IRAQ
[1] ISRAEL	[1] ITALY
[1] JAPAN	[1] KOREA, REPUBLIC OF
[1] LAO PEOPLE'S DEMOCRATIC REPUBLIC	[1] MALAYSIA
[1] MEXICO	[1] MOROCCO
[1] MYANMAR	[1] NEPAL
[1] NETHERLANDS	[1] PAKISTAN
[1] PANAMA	[1] PERU
[1] PHILIPPINES	[1] POLAND
[2] ROMANIA	[1] SERBIA AND MONTENEGRO
[1] SINGAPORE	[1] SLOVAKIA
[1] SLOVENIA	[1] SRI LANKA
[1] SWEDEN	[1] TAIWAN
[1] THAILAND	[1] TURKMENISTAN
[1] UKRAINE	[17] UNITED STATES
[1] UZBEKISTAN	[1] VIET NAM

## Red List assessed species 1: CR = 1;

[Pseudobagrus medianalis](#) CR

## BIBLIOGRAPHY

30 references found for *Hypophthalmichthys nobilis*

### Management information

[Aquatic Invaders of Belarus., 2007. Alien Species Database \*Aristichthys nobilis\*](#)

**Summary:** This database is of alien aquatic animals inhabiting waterbodies of the Republic of Belarus. It allows to search the species by scientific taxonomy and to get information on their origin, distribution and potential ecological impacts. The database was composed in result of the analysis of literature published during the last century and authors unpublished data. One can find some general information on Belarusian waterbodies, history of construction and functioning of the interbasin shipping canals, links to related sites, etc. The site is under testing and only an English version is available, a Russian version is expected shortly.

The database is available from: <http://www.aliensinbelarus.com/content/view/12/28/>.

This page is available from: [http://www.aliensinbelarus.com/index.php?option=com\\_database&Itemid=27&id=52&task=one\\_dat](http://www.aliensinbelarus.com/index.php?option=com_database&Itemid=27&id=52&task=one_dat) [Accessed 28 May 2007]

[Centre for Environment, Fisheries & Aquaculture Science \(CEFAS\), 2008. Decision support tools-Identifying potentially invasive non-native marine and freshwater species: fish, invertebrates, amphibians.](#)

**Summary:** The electronic tool kits made available on the Cefas page for free download are Crown Copyright (2007-2008). As such, these are freeware and may be freely distributed provided this notice is retained. No warranty, expressed or implied, is made and users should satisfy themselves as to the applicability of the results in any given circumstance. Toolkits available include 1) FISK- Freshwater Fish Invasiveness Scoring Kit (English and Spanish language version); 2) MFIISK- Marine Fish Invasiveness Scoring Kit; 3) MI-ISK- Marine invertebrate Invasiveness Scoring Kit; 4) FI-ISK- Freshwater Invertebrate Invasiveness Scoring Kit and AmphISK- Amphibian Invasiveness Scoring Kit. These tool kits were developed by Cefas, with new VisualBasic and computational programming by Lorenzo Vilizzi, David Cooper, Andy South and Gordon H. Copp, based on VisualBasic code in the original Weed Risk Assessment (WRA) tool kit of P.C. Sheloung, P.A. Williams & S.R. Halloy (1999).

The decision support tools are available from:

<http://cefad.defra.gov.uk/our-science/ecosystems-and-biodiversity/non-native-species/decision-support-tools.aspx> [Accessed 13 October 2011]

[The guidance document](#) is available from [http://www.cefad.co.uk/media/118009/fisk\\_guide\\_v2.pdf](http://www.cefad.co.uk/media/118009/fisk_guide_v2.pdf) [Accessed 13 January 2009].

[Champion, P. Clayton, J. and Rowe, D. 2002. Alien Invaders Lake Managers Handbook. Ministry for the Environment.](#)

**Summary:** Available from: <http://www.mfe.govt.nz/publications/water/lm-alien-invaders-jun02.pdf> [Accessed 3 February 2005]

[Clearwater, Susan J.; Chris W. Hickey and Michael L. Martin. 2008. Overview of potential piscicides and molluscicides for controlling aquatic pest species in New Zealand. Science for conservation 283. March 2008, New Zealand Department of Conservation](#)

**Summary:** Available from: <http://www.doc.govt.nz/upload/documents/science-and-technical/sfc283entire.pdf> [Accessed 20 March 2008]

[Copp, G.H., Garthwaite, R. and Gozlan, R.E., 2005. Risk identification and assessment of non-native freshwater fishes: concepts and perspectives on protocols for the UK. Sci. Ser. Tech Rep., Cefas Lowestoft, 129: 32pp.](#)

**Summary:** The discussion paper presents a conceptual risk assessment approach for freshwater fish species that addresses the first two elements (hazard identification, hazard assessment) of the UK environmental risk strategy. The paper presents a few worked examples of assessments on species to facilitate discussion.

Available from: <http://www.cefas.co.uk/publications/techrep/tech129.pdf> [Accessed 1 September 2005]

[Hewitt, C.L., Campbell, M.L. and Gollasch, S. 2006. Alien Species in Aquaculture. Considerations for responsible use. IUCN, Gland, Switzerland and Cambridge, UK. viii + 32 pp.](#)

**Summary:** This publication aims to first provide decision makers and managers with information on the existing international and regional regulations that address the use of alien species in aquaculture, either directly or indirectly; and three examples of national responses to this issue (New Zealand, Australia and Chile).

Available from: <http://data.iucn.org/dbtw-wpd/edocs/2006-036.pdf> [Accessed 22 September 2008]

Higbee, E., S. Fellow, and K. G. Shwayder. 2004. The Live Food Fish Industry: New Challenges in Preventing the Introduction and Spread of Aquatic Invasive Species. ANS Update: Fall/Winter 2004 Volume 10, No. 2

[Mendoza, R.E.; Cudmore, B.; Orr, R.; Balderas, S.C.; Courtenay, W.R.; Osorio, P.K.; Mandrak, N.; Torres, P.A.; Damian, M.A.; Gallardo, C.E.; Sanguines, A.G.; Greene, G.; Lee, D.; Orbe-Mendoza, A.; Martinez, C.R.; and Arana, O.S. 2009. Trinational Risk Assessment Guidelines for Aquatic Alien Invasive Species. Commission for Environmental Cooperation. 393, rue St-Jacques Ouest, Bureau 200, Montréal \(Québec\), Canada. ISBN 978-2-923358-48-1.](#)

**Summary:** In 1993, Canada, Mexico and the United States signed the North American Agreement on Environmental Cooperation (NAAEC) as a side agreement to the North American Free Trade Agreement (NAFTA). The NAAEC established the Commission for Environmental Cooperation (CEC) to help the Parties ensure that improved economic efficiency occurred simultaneously with trinational environmental cooperation. The NAAEC highlighted biodiversity as a key area for trinational cooperation. In 2001, the CEC adopted a resolution (Council Resolution 01-03), which created the Biodiversity Conservation Working Group (BCWG), a working group of high-level policy makers from Canada, Mexico and the United States. In 2003, the BCWG produced the Strategic Plan for North American Cooperation in the Conservation of Biodiversity. This strategy identified responding to threats, such as invasive species, as a priority action area. In 2004, the BCWG, recognizing the importance of prevention in addressing invasive species, agreed to work together to develop the draft CEC Risk Assessment Guidelines for Aquatic Alien Invasive Species (hereafter referred to as the Guidelines). These Guidelines will serve as a tool to North American resource managers who are evaluating whether or not to introduce a non-native species into a new ecosystem. Through this collaborative process, the BCWG has begun to implement its strategy as well as address an important trade and environment issue. With increased trade comes an increase in the potential for economic growth as well as biological invasion, by working to minimize the potential adverse impacts from trade, the CEC Parties are working to maximize the gains from trade while minimizing the environmental costs.

Available from: English version: [http://www.cec.org/Storage/62/5516\\_07-64-CEC%20invasives%20risk%20guidelines-full-report\\_en.pdf](http://www.cec.org/Storage/62/5516_07-64-CEC%20invasives%20risk%20guidelines-full-report_en.pdf) [Accessed 15 June 2010]

French version: [http://www.cec.org/Storage/62/5517\\_07-64-CEC%20invasives%20risk%20guidelines-full-report\\_fr.pdf](http://www.cec.org/Storage/62/5517_07-64-CEC%20invasives%20risk%20guidelines-full-report_fr.pdf) [Accessed 15 June 2010]

Spanish version: [http://www.cec.org/Storage/62/5518\\_07-64-CEC%20invasives%20risk%20guidelines-full-report\\_es.pdf](http://www.cec.org/Storage/62/5518_07-64-CEC%20invasives%20risk%20guidelines-full-report_es.pdf) [Accessed 15 June 2010].

Stone, N., C. Engle, D. Heikes, and D. Freeman. 2000. Bighead Carp. Southern Regional Aquaculture Center: SRAC Publication No. 438.

## General information

Aladin, N., 2001. Biodiversity of the Caspian Sea, CEP.

[Bailey, N. 2009. \*Hypophthalmichthys nobilis\* \(Richardson, 1845\).](#)

**Summary:** Accessed from: <http://www.marinespecies.org/aphia.php?p=taxdetails&id=154600> [Accessed 22 September 2009]

Bruneau, de Miré P. 1969. Une formi utilisée au Cameroun dans la lutte contre les mirides du cacaoyer: *Wasmannia auropunctata* Roger. Café Cacao Thé 13: 209-212.

**Summary:** Abstract: The author drew attention to the fact that in order to keep their plantations healthy the Boulous of Kribi area in Cameroun made use of an ant that had most probably been imported: *Wasmannia auropunctata* Roger. These ants were carried from one plantation to another in basket traps made of bundles of raphia leaflets and containing sugar cane or palm nut parings as bait which had been left in contact with the ants for at least three days. A trial showed that in less than ten days after being deposited these traps contained both larvae and immature adults of *Wasmannia auropunctata*. Knock-down counts from cacao trees in the Kribi region showed that this ant has driven away the mirids and Crematogaster ants and has reduced the number of insects generally, especially the Hemiptera, Orthoptera and Coleoptera. On the other hand, it contributed to the presence of psyllids and coccids of the genus Saisseria.

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 (1996), Volume 89, 1 and 2, pp. 73-91.

Ciolac, A. 2004. Migration of Fishes in Romanian Danube River. Applied Ecology and Environmental Research 2(1):143-163.



# GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: *Hypophthalmichthys nobilis*

[CONABIO. 2008. Sistema de información sobre especies invasoras en México. Especies invasoras - Peces. Comisión Nacional para el Conocimiento y Uso de la Biodiversidad. Fecha de acceso.](#)

**Summary:** English:

The species list sheet for the Mexican information system on invasive species currently provides information related to Scientific names, family, group and common names, as well as habitat, status of invasion in Mexico, pathways of introduction and links to other specialised websites. Some of the higher risk species already have a direct link to the alert page. It is important to notice that these lists are constantly being updated, please refer to the main page (<http://www.conabio.gob.mx/invasoras/index.php/Portada>), under the section Novedades for information on updates.

Invasive species - fish is available from: [http://www.conabio.gob.mx/invasoras/index.php/Especies\\_invasoras\\_-\\_Peces](http://www.conabio.gob.mx/invasoras/index.php/Especies_invasoras_-_Peces) [Accessed 30 July 2008]

Spanish:

La lista de especies del Sistema de información sobre especies invasoras de México cuenta actualmente con información acerca de nombre científico, familia, grupo y nombre común, así como el hábitat, estado de la invasión en México, rutas de introducción y ligas a otros sitios especializados. Algunas de las especies de mayor riesgo ya tienen una liga directa a la página de alertas. Es importante resaltar que estas listas se encuentran en constante proceso de actualización, por favor consulte la portada (<http://www.conabio.gob.mx/invasoras/index.php/Portada>), en la sección novedades, para conocer los cambios.

Especies invasoras - Peces is available from: [http://www.conabio.gob.mx/invasoras/index.php/Especies\\_invasoras\\_-\\_Peces](http://www.conabio.gob.mx/invasoras/index.php/Especies_invasoras_-_Peces) [Accessed 30 July 2008]

[DIAS \(Database on Introductions of Aquatic Species\) \*Hypophthalmichthys molitrix\* and \*Hypophthalmichthys nobilis\*](#)

**Summary:** The database includes records of species introduced or transferred from one country to another. The FAO Database on Introductions of Aquatic Species (DIAS) was initiated by R. Welcomme in the early 1980s. Initially it considered primarily only freshwater species and formed the basis for the 1988 FAO Fisheries Technical Paper No. 294. Today DIAS has been expanded to include additional taxa, such as molluscs and crustaceans, and marine species.

This factsheet is available from:

[http://www.fao.org/figis/servlet/FsSearchServlet?qid=fsl\\_55061&r1=1&bsize=136&rn=136&lxsl=webapps/figis/introsp/format/searchintrosp/list.xml](http://www.fao.org/figis/servlet/FsSearchServlet?qid=fsl_55061&r1=1&bsize=136&rn=136&lxsl=webapps/figis/introsp/format/searchintrosp/list.xml) [Accessed 10 April 2006]

DIAS is available from: <http://www.fao.org/figis/servlet/static?dom=collection&xml=dias.xml>

Elvira, B. 2001. Identification of non-native freshwater fishes established in Europe and assessment of their potential threats to the biological diversity. Convention on the conservation of European wildlife and natural habitats: T-PVS (2001) 6.

[FishBase, 2009. \*Hypophthalmichthys nobilis\* \(Richardson, 1845\)](#)

**Summary:** FishBase is a global information system with all you ever wanted to know about fishes. FishBase on the web contains practically all fish species known to science. FishBase was developed at the WorldFish Center in collaboration with the Food and Agriculture Organization of the United Nations (FAO) and many other partners, and with support from the European Commission (EC). Since 2001 FishBase is supported by a consortium of seven research institutions. You can search on [Search FishBase](#)

This species profile is available from:

<http://www.fishbase.org/Summary/SpeciesSummary.cfm?ID=275&genusname=Aristichthys&speciesname=nobilis> [Accessed 27 September 22 2009]

[Gulf States Marine Fisheries Commission \(GSMFC\), 2003. \*Hypophthalmichthys molitrix\* \(Valenciennes, 1844\). University of Southern Mississippi/College of Marine Sciences/Gulf Coast Research Laboratory.](#)

**Summary:** Available from: [http://nis.gsmfc.org/nis\\_factsheet.php?toc\\_id=189](http://nis.gsmfc.org/nis_factsheet.php?toc_id=189) [Accessed 27 May 2005]

[Gulf States Marine Fisheries Commission \(GSMFC\), 2003. \*Hypophthalmichthys nobilis\* \(Richardson, 1845\). University of Southern Mississippi/College of Marine Sciences/Gulf Coast Research Laboratory.](#)

**Summary:** Available from: [http://nis.gsmfc.org/nis\\_factsheet.php?toc\\_id=190](http://nis.gsmfc.org/nis_factsheet.php?toc_id=190) [Accessed 27 May 2005]

Holcik, J. UNDATED. Changes in the fish fauna and fisheries in the Slovak section of the Danube River: a review. H Ann. Limnol. Int. J. Lim. 39 (3), 177-195

[ITIS \(Integrated Taxonomic Information System\), 2009. Online Database \*Hypophthalmichthys nobilis\* \(Richardson, 1845\)](#)

**Summary:** An online database that provides taxonomic information, common names, synonyms and geographical jurisdiction of a species. In addition links are provided to retrieve biological records and collection information from the Global Biodiversity Information Facility (GBIF) Data Portal and bioscience articles from BioOne journals.

Available from: [http://www.itis.gov/servlet/SingleRpt/SingleRpt?search\\_topic=TSN&search\\_value=163692](http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=163692) [Accessed September 22 2009]

Lusk, S., L. Hanel, and V. Luskova. 2004. Red List of the ichthyofauna of the Czech Republic: Development and present status. Folia Zool. - 53(2): 215-226 (2004).

Nguyen T. T., and U. N. Nakorn. 2004. Genetic impacts of translocations on biodiversity of aquatic species with particular reference to Asian countries. Aquaculture Asia 9(2): 4-7.

[Nico, Leo and Pam Fuller. 2005. \*Hypophthalmichthys nobilis\*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL](#)

**Summary:** Available from: <http://nas.er.usgs.gov/queries/FactSheet.asp?SpeciesID=551> [Accessed 27 May 2005]

Pitman, B. 2003. Preventing Spread of Non-Target Species. United States Fish and Wildlife Service: Aquatic Invasive Species Coordinator - Southwest Region.

Shrestha, T. K. UNDATED. Conservation and Management of Fishes in the Large Himalayan Rivers of Nepal. Central Department of Zoology: Tribhuvan University.

Spataru, P., and M. Gophen. 1985. Feeding behaviour of silver carp *Hypophthalmichthys molitrix* Val. and its impact on the food web in Lake Kinneret, Israel. Hydrobiologia Issue: Volume 120, Number 153 - 61 1985.

[WoRMS 2009. \*Aristichthys nobilis\* \(Richardson, 1845\).](#)

**Summary:** Available from: <http://www.marinespecies.org/aphia.php?p=taxdetails&id=154606> [Accessed 22 September 2009]

Zhukov P I, 1988. Encyclopedia on ecology of freshwater fishes. Minsk, Nauka i tekhnika Press