



December 20, 2012

Background

In June 2011, the U.S. Army Corps of Engineers (USACE) released an Aquatic Nuisance Species (ANS) White Paper as an interim product of the Great Lakes & Mississippi River Interbasin Study (GLMRIS). The purpose of GLMRIS is to evaluate options and technologies available to prevent the spread of ANS between the Great Lakes Basin (GLB) and Mississippi River Basin (MRB) through aquatic pathways. The purpose of the ANS White Paper was to catalog potential ANS within the GLB and MRB, and to identify which of these species will be an initial focus in GLMRIS. Thirty-nine (39) aquatic nuisance species are identified in the ANS White Paper as ANS of Concern for GLMRIS in the Chicago Area Waterway System (CAWS): 10 were identified to be of concern for potential transfer to the GLB, and 29 were of concern for potential transfer to the MRB.

New information has been discovered about the establishment of certain ANS of Concern in both the GLB and MRB. Removal of ANS from the original list of 39 ANS will allow the team to focus on the ANS that remain.

New Information

The initial list of 39 ANS of Concern - CAWS was comprised of species that were considered established in either the MRB or GLB, but not both. However, during the collection of additional detailed information to support baseline risk assessment activities for GLMRIS, USACE discovered that six ANS of Concern - CAWS, blueback herring (*Alosa aestivalis*), alewife (*A. pseudoharengus*), European amphipod (*Echinogammarus ischnus*), nuisance algae *C. pseudostelligera*, tubificid worm (*Branchiura sowerbyi*), and spiny waterflea (*Bythotrephes longimanus*), are found in both basins.

Blueback Herring

The blueback herring (*A. aestivalis*) was initially thought to be established only in the GLB, where it is established in Lake Ontario (Fuller et al. 2012). However, in Tennessee, blueback herring were stocked in a few reservoirs initially, and they have since spread to other waterbodies in Tennessee. Blueback herring have been found in the Norris Reservoir which is on the Clinch River, and Boone reservoir (John Hammond, Tennessee Wildlife Resources Agency, telephone communication, 2012). The Clinch River flows into the Tennessee River, which is a tributary of the Ohio River, which is part of the MRB. Even though the available information suggests that the blueback herring may now be established in some areas of the MRB in addition to being established in the GLB, the natural resources advisory team decided to retain the blueback herring on the list of ANS of Concern – CAWS at this time.



Alewife

Alewife (*A. pseudoharengus*) was initially thought to be established only in the GLB, where it has been established for decades (Fuller et al. 2011). The Tennessee Wildlife Resources Agency states that alewife are located in Cherokee, Norris, Boone and South Holston reservoirs, as well as several reservoirs located downstream (John Hammond, Tennessee Wildlife Resources Agency, telephone communication, 2012)(Attachment 1). Norris Reservoir is on the Clinch River and the Watauga Reservoir was formed from the Watauga River, both of which flow into the Tennessee River. Alewife was stocked in reservoirs by the TVA initially, but these fish have since spread by “bait bucket” transfer. Alewife are found in the Dale Hollow Reservoir which was formed from the Obey River which flows into the Cumberland River (Frank Fiss, Tennessee Wildlife Resources Agency, telephone communication, 2012), The Cumberland River and the Tennessee River flow into the Ohio River, which is part of the MRB. The alewife is established in the GLB and the MRB and should therefore be removed from the list of ANS of Concern – CAWS.

European Amphipod

The European amphipod (*E. ischnus*) was initially thought to be established only in the GLB (Benson and Kipp 2011). However, the European amphipod has been detected at five sites between river mile 477 and 835 on the Upper Mississippi River and two sites in the middle reach of the Ohio River. By 2006, its distribution was essentially continuous in the upper reach of the Upper Mississippi and in the middle and lower reaches of the Ohio River (Grigorovich et al. 2008). Consequently, the European amphipod is established in the GLB and MRB and should therefore be removed from the list of ANS of Concern - CAWS.

Nuisance Algae

Nuisance algae (*C. pseudostelligera*) is a nuisance algae well documented in Lake Michigan (Kipp 2011). However, in a comprehensive 1978 biological survey of the Illinois Waterway by the Illinois Natural History Survey *C. pseudostelligera* was collected at multiple locations above and below Brandon Lock (Illinois Natural History Survey 1980). *C. pseudostelligera* was collected as far south as Grafton (the most southern extent of the survey area). *C. pseudostelligera* has also been recorded as a common species in the Ohio River Basin (Anderson et al. 1965). Consequently, the *C. pseudostelligera* is established in the GLB and MRB and should therefore be removed from the list of ANS of Concern - CAWS.

Tubificid Worm

The tubificid worm (*B. sowerbyi*) has been documented in Lake Michigan since 1951 (Liebig et al. 2012). However, multiple surveys have found this species in the Illinois River Bluffs Assessment Area. The Illinois River Bluffs Assessment includes parts of the upper and lower Illinois River watersheds. It was also found in Pool 19 of the Upper Mississippi River which extends from Lock and Dam 19 in Keokuk to Lock and Dam 18 in Gladstone, IL (Jahn and



Great Lakes & Mississippi River Interbasin Study (GLMRIS) ANS of Concern - CAWS

Anderson 1986). *B. sowerbyi* is also found in the Lower Mississippi River in the Mississippi Delta region as far south as Vicksburg, MS (Baker et al. 1987). Consequently, *B. sowerbyi* is established in the GLB and MRB and should therefore be removed from the list of ANS of Concern – CAWS.

Spiny Waterflea

The spiny waterflea (*B. longimanus*) has been established in Lake Michigan since 1986 (Pothoven et al. 2003). From 2009 to the present, this species has also been documented in multiple lakes in Madison, Wisconsin, that are formed from the Yahara River (Wisconsin Dept. of Natural Resources, available at http://dnr.wi.gov/lakes/invasives/AISLists.aspx?species=SPINY_WATERFLEA). The Yahara River flows into the Rock River, which flows in to the Upper Mississippi River. Argonne National Laboratory contacted Jake Vander Zanden of the Center for Limnology, University of Wisconsin – Madison, for further information on whether this species was established in the Yahara Chain Lakes. (Walsh, J. October 3, 2012. University of Wisconsin, Madison. Email communication. Jransom.walsh@gmail.com) It is abundant and consistently found in Lake Mendota (Attachment 2) (Vander Zanden, J. October 3, 2012. University of Wisconsin, Madison. Email communication. Mjvanderzand@wisc.edu). Lake Monona, Lake Waubesa and Lake Kegonsa are also likely established, but at much lower densities than Lake Mendota.

Minnesota has also determined that certain water bodies are infested with the spiny water fleas. See Minnesota Department of Natural Resources' July 30, 2012 Designation of Infested Waters. Refer to Attachment 2 for a map of reported infestations of spiny water fleas in Wisconsin and Minnesota. The spiny water flea is found in regions where water temperature ranges between 4 and 30°C (Grigorovich et al 1998), suggesting the Mississippi River Basin (MRB) is climatologically suitable for this species. The spiny water flea is established in both the GLB and the MRB and therefore should be removed from the ANS of Concern

Summary

While researching species in support of the detailed baseline risk assessment activities for GLMRIS, USACE discovered that six of the identified ANS of Concern - CAWS may potentially be established in both the Great Lakes and Mississippi River basins. As the purpose of GLMRIS is to prevent the transfer of ANS between the basins via aquatic pathways, establishment of an ANS in both basins warrants consideration of removal of the species from further consideration as part of this study. After reviewing the available information for the six species, the GLMRIS natural resources advisory team recommended one species (blueback herring (*A. aestivalis*)) be retained as an ANS of Concern – CAWS and the following five species be removed from the list of ANS of Concern – CAWS: alewife (*A. pseudoharengus*), European amphipod (*E. ischnus*), nuisance algae (*C. pseudostelligera*), tubificid worm (*B. sowerbyi*), and spiny waterflea (*B. longimanus*). Species removed from the list of ANS of Concern - CAWS will not be subject to further study in GLMRIS.



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Great Lakes & Mississippi River Interbasin Study (GLMRIS)
ANS of Concern - CAWS

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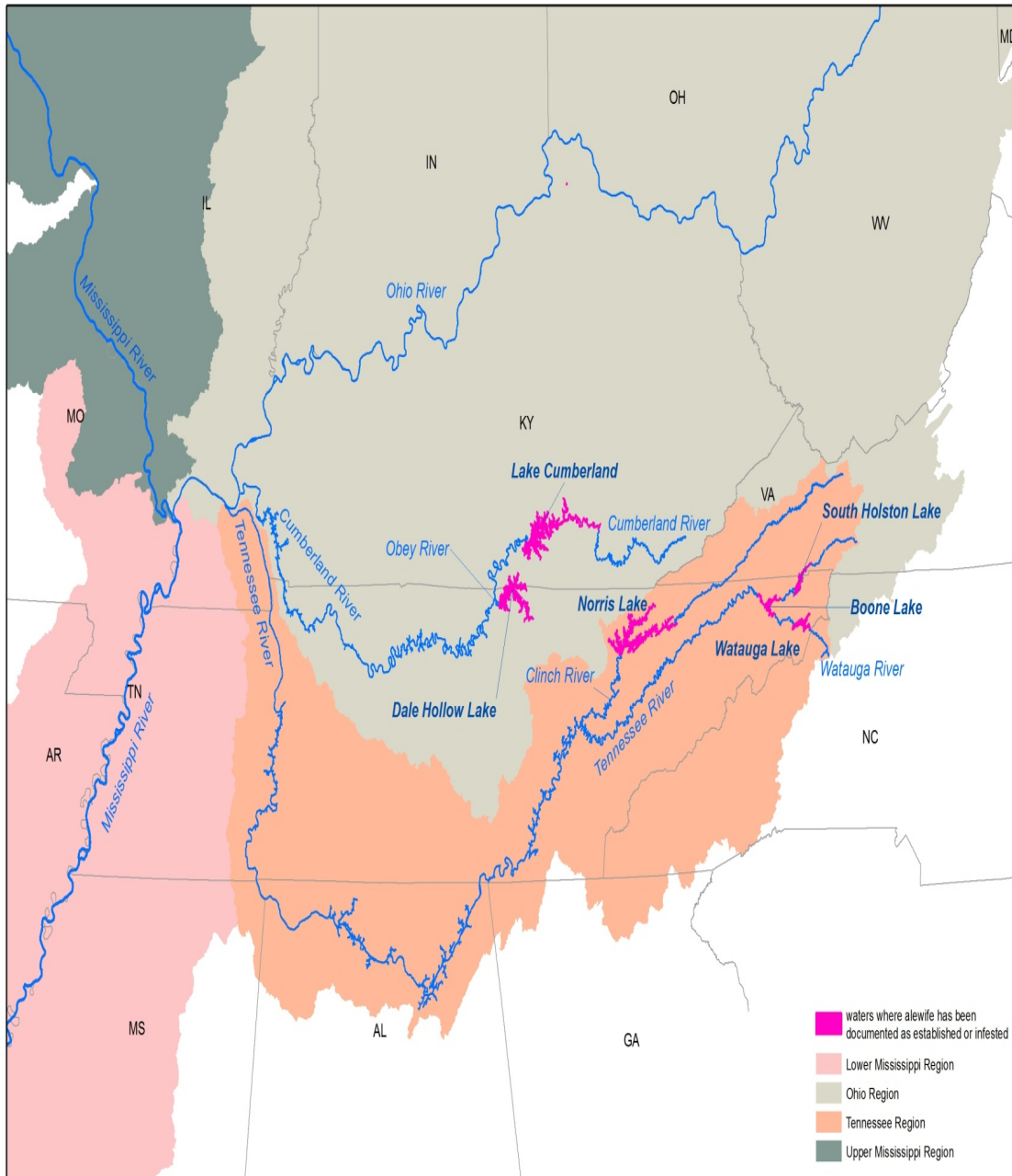
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Attachment 1

Alewife Found in Study Area Outside of Great Lakes Basin





Attachment 2

Spiny Waterflea in Mississippi River Basin

