TENNESSEE DEPARTMENT OF HEALTH
It's About Time!

Tennessee Department of Health Public Health Laboratories Newsletter

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Inside this issue…

Fall in East Tennessee

Silver Carp Fly into Trouble in Tennessee Waters: Introduced in the 1970's for Aquaculture, They Fly into Space Where No Fish Should Go!

Hypophthalmichthys molitrix, also known as the silver carp or flying carp, has recently gained national recognition and concern. This invasive species was introduced in the 1970's from Asia for aquaculture and probably escaped into the Mississippi River during flooding events. Silver carp were cultured for phytoplankton control, sewage lagoon cleaning, and as a potential food fish. Although this concern comes mainly from biologists and resource officials, the impacts from these fish are also being felt by fishermen and boaters while visiting favorite rivers and lakes in several states in the United States, including Tennessee.

Can these fish really fly? No. However, this particular species can and most definitely will leap from the water when disturbed by any passing outboard motor. Documented cases of broken noses and ribs, concussions, and bruises are common in areas where the fish occur. Leaping behavior is believed by many to be a predator response; they leap away from the predator. These fish are commonly reported and photographed leaping in excess of six feet out of the water.

Wildlife biologists at work documenting Silver Carp leaping behavior.

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Tennessee Public Health Laboratories Welcome Dr. Brock Neil as New Manager of the Immunoserology, Virology and Rabies Laboratories

The Tennessee Department of Health Division of Laboratory Services would like to welcome Dr. Brock Neil to our staff as the new manager of immunoserology, virology, and rabies. Dr. Neil comes to our laboratory from the University of Iowa where he received his Ph.D. in Microbiology in 2009. His studies focused on biofilm formation on human respiratory tissue by the bacterial pathogen *Neisseria meningitidis*. Dr. Neil then received an Emerging and Infectious Disease Post-Doctoral Fellowship through the Association of Public Health Laboratories and the Centers for Disease Control and Prevention where he spent the next 20 months at the State Hygienic Laboratory at the University of Iowa. During his time at the Iowa State Health Laboratory he helped establish new molecular-based testing methods for the bacteriology and molecular diagnostics sections, as well as, a new culture-based assay for the virology section. When discussing his reason for a career move to public health, Dr. Neil emphasized, "The EID fellowship was an incredible opportunity for me to see how my expertise can be utilized everyday to help those around me. It is much different from academic research where you never know if all the long hours will result in a discovery that will make a true difference in peoples' lives. I am truly excited and grateful for the opportunity to serve the people of Tennessee."

Silver Carp Fly into Trouble in Tennessee Waters: Introduced in the 1970's for Aquaculture, They Fly into Space Where No Fish Should Go! (Continued)

This flying nuisance is more dangerous below the water's surface than above. The silver carp is a voracious feeder and is able to eat as much as 20% of their total body weight in plankton every day. This, coupled with their extremely fast growth rate, is what makes this fish so detrimental to an ecosystem to which it is not native.

Currently, they have invaded fourteen states in the United States including Tennessee. The silver carp are filter feeders that prey on phytoplankton, zooplankton, bacteria, decaying organic matter, and aquatic vegetation. These fish have highly specialized structures in their gills that can filter items from the water that are microscopic (>4 microns). This fact about their feeding habits makes them an overwhelming threat to Tennessee's native fishes that rely on the same food items for growth and survival.

Native fishes such as shiners, minnows, shad, paddlefish, and many other fishes at the larval stage could be in danger of starvation, if the invasion of the silver carp stays on course through our state.

The Mississippi River currently has the most prolific population of these intruders. However, there have also been encounters on the Tennessee and Cumberland Rivers. Some states have used such deterrents as electrical barriers in an attempt to repel the fish while allowing nautical travel through certain waterways. Other means still in the test phase are acoustics and techniques involving bubbles. Simply put, this species of fish has the ability to take over an entire aquatic ecosystem at an alarming rate.

There is a growing interest in developing strategies to combat the silver carp invasion. Efforts are expected to step up as we begin to see negative economic effects across the region.

Submitted by Keith Gaddes, Aquatic Biologist, Aquatic Biology Section of the Environmental Laboratory

Above—Local fisherman reacts as a carp flies inches from his head.
Left— photo documentation of the relative numbers of carp to be encountered in Tennessee waters.

Notable Changes in the Newborn Screening Forms: Watch Those Expiration Dates!

Please be aware that as of September 30, 2010, the Newborn Screening form PH 1582 (yellow in color, lot W071) with Revision date of 08/07 are expired and should not be used for collection of newborn screening specimens. Any specimens collected on lot W071, after September 30, 2010, will be reported as Unsatisfactory – Filter paper expired. These expired forms should be discarded.

If you have not already ordered a supply of in date collection forms, please contact your local health department to fill your needs. Other forms are in circulation and may be used for sample collection. The current acceptable lots are:

W081 (peach in color with expiration of 10/2011),
W083 (blue in color with expiration of 5/2012), and
W092 (tan in color with expiration of 3/2013).

Thank you for your cooperation and if you have further questions, please contact Christine McKeever at 615-262-6352 or Chris.Mckeever@tn.gov or Thomas Childs at 615-262-6446 or Thomas.Childs@tn.gov

Chemical Emergency Preparedness

The Level 2 Chemical Terrorism (CT) Laboratory, located in Nashville, is one of 36 Level 2 state laboratories funded through the Public Health Preparedness and Emergency Response for Bioterrorism. The CT Lab has both Level 2 and Level 3 responsibilities. Level 3 responsibilities require the lab to receive, package and ship blood and urine specimens collected from those populations suspected of being contaminated by a chemical agent as the result of a suspected chemical terrorist event. The laboratory also has the responsibility of training healthcare professionals on collection, packaging and shipping of specimens statewide. The Level 2 part of the funding requires the CT Laboratory to be equipped and prepared to receive and screen biological specimens collected from populations suspected of being contaminated by a suspected chemical terrorism agent. The laboratory is equipped with a Perkin Elmer Inductive Coupled Plasma Mass Spectrometer with a Dynamic Reaction Chamber (ICP/DRC/MS) in conjunction with a liquid chromatograph for screening urines and blood for trace amounts of toxic metals. The laboratory is also equipped with two Agilent 6890N Gas Chromatograph Mass Spectrometers, equipped with a Gerstel MP2 Prep Station and cryo-traps for measuring metabolites in urine and/or blood in response to populations suspected of being contaminated by a chemical exposure. The Nashville laboratory is the only Level 2 laboratory in the state to have these capabilities.

Furthermore, the Environmental Laboratory Division of Organic, Inorganic, and Radiochemistry laboratories have response protocols established for screening samples collected from an unknown chemical event occurring within the state of Tennessee. A team of chemists are on-call to perform testing in case of an emergency. Procedures enable the laboratories to give a preliminary report within 4 hours of receipt of sample, or samples.

The Bioterrorism and Chemical Terrorism Laboratories have worked together to put together collection kits for First Responders to use for collecting samples from a suspected unknown event. These kits, designed to safely transport samples to a state lab. have been distributed throughout the state of Tennessee, with extra kits available at the three Regional laboratories (Nashville, Knoxville, and Jackson) and the Shelby County Health Department laboratory. Periodically, workshops are held in each region of the state to train First Responders on how to use these kits.

Since late 2001, the Tennessee Department of Health, Division of Laboratory Services has partnered with the National Guard's 45th Civil Support Team (CST), located in Smyrna, for chemical and biological terrorism preparedness. This partnership began with the formation of the Weapons of Mass Destruction (WMD) Working Group, which includes representatives from: Federal Bureau of Investigation (FBI), Tennessee Office of Homeland Security, Tennessee National Guard, Tennessee Department of Safety, Tennessee Bureau of Investigation (TBI), Tennessee Emergency Management Agency (TEMA), Tennessee Department of Health, and Tennessee Department of Agriculture.

Submitted by David Whybrew, Manager
Chemical Terrorism Laboratory

Personnel News: Division of Laboratory Services Welcomes Newcomers

Employee Name	Hire Date	Section	Job Title
Dr. Brock Neil	October	Immunoserology, Virology and Rabies	Manager
Hemdad Mawlood	October	General Bacteriology	Microbiologist 2-Certified
Gwendolyn McKee	October	Newborn Screening	Microbiologist 2-Certified
Xianzhang Meng	October	Molecular Biology	Microbiologist 2-Certified
Narda Villegas	November	Newborn Screening	Microbiologist 1-Certified
Julie Viruez	November	General Bacteriology	Microbiologist 1-Certified

Environmental Laboratories Director Weighs in on the EPA's Voluntary Water Laboratory Alliance for Tennessee Drinking Water Laboratories

The U.S. Environmental Protection Agency (EPA) formally launched the Water Laboratory Alliance (WLA) in the fall of 2009 in conjunction with the second phase roll-out of the Environmental Response Laboratory Network (ERLN). This network offers the capabilities and capacity to analyze water samples in the event of natural, intentional or unintentional water contamination involving chemical, biological or radiochemical contaminants. The WLA is composed of public health, environmental and select commercial laboratories and focuses solely on water matrices.

The Water Laboratory Alliance Response Plan establishes a comprehensive, national laboratory response approach to water contamination events including preparedness, response, remediation and recovery. In addition, it provides a system that can be used in conjunction with existing Incident Command System (ICS) structures and procedures that may already be in place.

Tennessee Drinking Water Laboratories are encouraged to become WLA members for a variety of reasons including improved preparedness to respond to any emergency situation, an opportunity to participate in emergency response preparedness exercises, and the formation of partnerships with neighboring laboratories to support surge capacity. In addition, membership helps to provide improved communications with peer laboratories and knowledge about neighboring laboratory analytical capabilities and available personnel and gives priority access to EPA water security-related training opportunities to participating Tennessee Drinking Water Laboratories.

Among the benefits of membership in WLA is the increased name recognition for governmental funding programs and initiatives and access to mechanisms for reimbursement in case of an actual incident. Also of benefit is the coordinated technology transfer from EPA and other federal agencies and the opportunity to review and comment on federal documents related to drinking water laboratory issues.

Some of the WLA tools and resources:

- *Water Contaminant Information Tool (WCIT):* A password-protected online database with information on more than 100 contaminants that may pose a serious threat if introduced into water systems
- *National Environmental Methods Index for Chemical, Biological and Radiological Methods (NEMI-CBR):* A secure, web-based tool that enables easy comparison of methods for drinking water contaminants
- *EPA Compendium of Environmental Testing Laboratories:* A secure, web-based tool that provides laboratory capability, capacity and contact information.
- *Chemical Method Development and Validation:* Includes rapid screening for unregulated contaminants and adaptation of methods that are already being used for water analyses
- *Sampling Guidance for Unknown Contaminants in Drinking Water:* Provides detailed guidance on sample collection, preservation and transport procedures for drinking water contaminants

Detailed information on ERLN/WLA membership
http://www.epa.gov/erln/join.html

Additional information on WLA, WLA@epa.gov or

http://cfpub.epa.gov/safewater/watersecurity/wla.cfm

EPA Region 4
(Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina and Tennessee):
Gary Bennett at (706)355-8551 or
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Submitted by Robert Read, PhD, Director
Environmental Laboratories