

Water Quality Update

Newsletter of Extension Water Quality Programs

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Governor Signs mussel harvesting legislation

They're small in size, but they're a million-dollar industry in Oklahoma. That's why several species of freshwater mussel are now protected by state law. Senate Bill 865 authored by state Rep. Joe Hutchison, D-Jay, and Sen. Rick M. Littlefield, D-Grove, was signed into law recently by Governor Frank Keating.

The bill sets size limits for harvesting of various mussel species in Oklahoma, including sand shells, muckets, creepers, grandmas, pocketbooks, lady fingers, squaw feet, and cucumbers. They may not be harvested if less than three inches in diameter, SB 865 dictates.

"Those species, although not commercially important, are rare and needed some kind of size restrictions for harvesting," said Kim Erickson, chief of fisheries with the Oklahoma Wildlife Department. Often, while commercial mussels are being harvested, the non-commercial variety will be picked up by mistake before they are sexually mature, Erickson said. Their population could decrease if no size limits are set for harvesting, he warned.

The most available and the best for harvesting are the maple leaf and the three ridge mussels, Erickson said. Those must be at least two and three-quarters of an inch for harvesting. Other commercially harvested mussels include the three knot and washboards. The three knot carries a two-inch minimum and the washboards have to be at least four inches in diameter for harvesting.

State law decrees that the maple leaf mussel "is the only mussel which shall be harvested for commercial purposes in the open portion of Grand Lake and its tributaries" from April 1 through Sept. 30.

Although mussel harvesting is a lucrative industry in Oklahoma, it quickly grows to a multimillion-dollar industry in Japan. Erickson explained that the maple leaf mussel is used in Japan to speed up the process of oyster pearl culturing. The meat is cooked out, Erickson said, and only

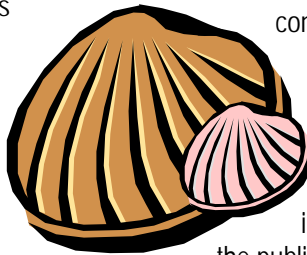
the mussel shells are used in the process. He said a small plug of the maple leaf mussel shell is placed into an oyster, which speeds up the process of pearl culturing.

Erickson said the pesky zebra mussel, which crept into Oklahoma around 1995, has a small but firm grip in this state.

To keep that species from spreading, Erickson urges lake and navigation system visitors to be educated about the zebra mussel. So far, the critters generally have been confined to the state's navigation system around Muskogee. Erickson said public awareness should be heightened in order to prevent the zebra mussel from spreading to other Oklahoma lakes and rivers. "There isn't much anyone can do once the zebra mussel is introduced into a water system, except educate the public about how to prevent their spread," Erickson said. He suggests that owners drydock and clean their boats, especially before going from one waterway to another.

The largest threat that zebra mussels pose is the clogging of industrial water intake systems. Erickson said officials of the Army Corps of Engineers are actively taking measures to keep zebra mussels from leaving Oklahoma's navigation system and infesting other waterways.

- Oklahoma House of Representatives press release



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Raw Oysters Can Harbor Intestinal Parasite

A single-cell parasite joins the ranks of human pathogens harbored by oysters,



according to a study reported in the March issue of Applied and Environmental Microbiology.

Oocysts--encased eggs--of the parasite *Cryptosporidium parvum* were found in oysters from six rivers feeding the Chesapeake Bay. The study--the first to look for *C. parvum* in shellfish--was conducted by zoologist Ronald Fayer with USDA's Agricultural Research Service and colleagues with Johns Hopkins University and the National Oceanic and Atmospheric Administration.

The researchers also demonstrated that some of the oocysts would develop in mice, indicating they pose a potential risk to humans who eat raw oysters. There have not been any human outbreaks attributed to oysters. Fayer presented the findings at the International Conference on Emerging Infectious Diseases in Atlanta, Ga.

C. parvum are protozoan parasites in waterways worldwide. When ingested, they can infect gastrointestinal cells, where they evoke cramping, diarrhea and sometimes nausea and vomiting four to 10 days later. Because of the long incubation period, *C. parvum* is often not connected with the flu-like symptoms.

Symptoms range from mild to severe in healthy people and can lead to chronic diarrhea, dehydration and death in people who have a weak immune system.

The oocysts don't survive temperatures above 164 degrees Fahrenheit, so boiling or frying shellfish would prevent infection. But they do survive chlorine quite well. In 1993, more than 400,000 Milwaukee residents suffered *C. parvum* infections from contaminated drinking water. Smaller outbreaks have occurred around the country. An expert on the parasite, Fayer developed a video to train water treatment personnel on how to prevent transmission. He conducts studies at ARS' Immunology and Disease Resistance Laboratory, Beltsville, Md.

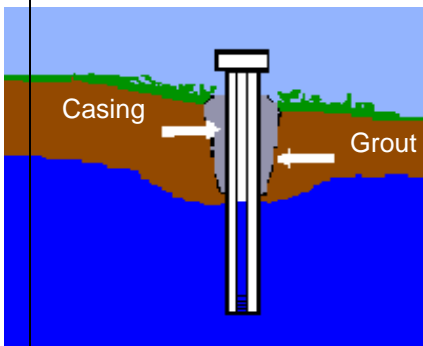
Suspecting that shellfish might filter the parasite from contaminated waters, Fayer and colleagues sampled oyster beds at the mouth of six Chesapeake tributaries and found oocysts in oysters from each site. Subsequently, they found oocysts in nearly all oysters sampled from commercial beds at five other locations in the Chesapeake--with some oysters having more than 4,000 oocysts.

C. parvum can infect all mammals. Feces from humans or domestic and wild mammals can contaminate waterways. The researchers earlier showed that geese could transport oocysts through feces and contribute to their spread into waterways.

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- USDA press release

Oklahoma considers tougher wellhead rules for water protection



Oklahoma state Senator Paul Muegge is calling for his colleagues to support policies to improve the quality of the state's water supply.

"The establishment of standards and protections for water quality is an issue that touches the lives of every Oklahoman," said Sen. Muegge. "I believe the recent controversy over confined animal feeding operations could result in the initiation of a positive water quality policy."

WELLHEAD - The area around the well that contributes surface H₂O to the ground H₂O system that feeds the well

The senator wants to start with improved wellhead protections. Such protections have been used for more than a decade to safeguard drinking water supplies. Only six states have enacted compulsory measures.

Oklahoma took a first step toward recognition of the need to begin a wellhead protection program by passing a bill during the 1997 session.

In it, the legislature recognized the importance of “management, protection, and conservation of public ground water supplies” and instructed the Department of Environmental Quality to create rules aimed at protection of drinking water.

“In that bill we also directed DEQ to develop a wellhead protection program,” said Sen. Muegge. “Such a program is designed to help municipalities, rural water districts, non-profit water corporations, and other public ground water and source water suppliers in the conservation and protection of their ground water and source water supplies.”

The information gathered during the implementation of wellhead protection provides data that is needed in more effective land use plans, infrastructure designs, and growth management strategies.

“Current animal waste issues will more than likely determine how serious further development of a public policy for water quality protection is considered,” Muegge noted.

Oklahoma will need to establish a database of information on specific watershed areas. Before the state can achieve the wellhead protection needed the watershed and source water knowledge will need to be expanded, Muegge said.

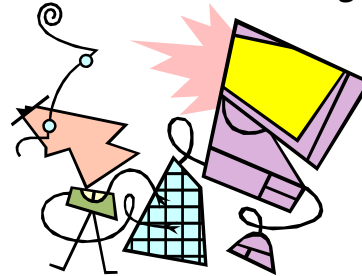
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Cool & Useful Web Pages



👏 USDA Backyard Conservation Campaign 👏

10 conservation practices have been scaled down for homeowners and city residents to use in their yards. Tip sheets offer "how to" steps and helpful hints on things such as wildlife habitat, backyard ponds, & water conservation.

www.nhq.nrcs.usda.gov/CCS/Backyard.html

*** National Library for the Environment ***

Contains seven free and very useful information resources: hundreds of up-to-date non-partisan issue reports, environmental education programs and resources, environmental laws (local, state, federal, and international), population-environment links, virtual library of ecology and biodiversity, info on environmental conferences and meetings, and environmental careers and jobs.

www.cnie.org

📖 ARS Pesticides Properties Database 📖

The ARS PPD is a compendium of chemical and physical properties of 230 widely used pesticides. It was developed to provide water quality modelers and managers a list of the pesticide properties most important for predicting the potentials of pesticides to move into ground and surface waters under a range of weather and soil conditions.

www.arsusda.gov/rsml/ppdb.html

