

Reclamation Podcast 2009-01

“Mussel Beach” (approx run time=9:00)

Welcome to the Bureau of Reclamation Great Plains Region Podcast...

(Music Stinger)

They arrive unexpectedly, eat up all the food, leave a huge mess and are nearly impossible to get rid of. No, they're not your relatives, but an insidious threat to our waterways and vital infrastructure.

For more than two decades Reclamation and other agencies have been monitoring the spread of tiny shellfish usually no bigger than your fingernail. According to Bureau of Reclamation Regional Invasive Species Coordinator Stephanie Jordan, these pests first arrived in the US and Canada by hitchhiking:

<<ACTUALITY: STEPHANIE JORDAN 01>>

*“THE QUAGGA AND ZEBRA MUSSLES ARE BOTH NATIVE TO EURASIA, BUT BECAUSE THEY BOTH HAVE THESE HAIRLIKE THREADS, THEY'RE ABLE TO AFFIX THEMSELVES TO REALLY HARD SURFACES. IT IS REALLY SUSPECTED THAT THEY AFFIXED THEMSELVES TO COMMERCIAL VESSELS AND IN BALLAST WATER TANKS.”*

The unwelcome visitors were first detected at Lake Saint Claire near Detroit in the early 1980's, and rapidly spread from there:

<< ACTUALITY: STEPHANIE JORDAN 02>>

*“THEY DISPERSED THROUGH THE GREAT LAKES VERY RAPIDLY, AND IT'S DUE REALLY TO THEIR REPRODUCTION, BECAUSE THEY RELEASE THESE LITTLE LARVA THAT ARE ABLE TO SWIM FREELY IN THE WATER...THEY CANNOT ONLY --WHEREVER THE COLONY WAS ESTABLISHED—THESE LITTLE LARVA ARE ABLE TO SWIM DOWNSTREAM AND RE-ESTABLISH NEW COLONIES QUITE QUICKLY.”*

Any time plants or animals are introduced to an area where they don't belong the results can be catastrophic, and the mussels are no exception. Away from their native Black and Caspian Sea habitats and the natural biological controls that kept their numbers in check, the infestations have been known to reach three-quarters of a million adults per square yard. They attach themselves to everything from boat docks to pipes supplying hydro-electric generating facilities as well as water storage and delivery systems. And that means a huge headache for managers responsible for keeping that vital infrastructure operating efficiently. Research Botanist Fred Nibling is with Reclamation's Technical Service Center in Denver, Colorado, he tells us when the mussels move in...there goes the neighborhood...

<<ACTUALITY: FRED NIBLING 01>>

*"IN A LIGHT INFESTATION THEY CAN CAUSE FRICTION LOSS, SO THE WATER IS SLOWED DOWN, AND THAT FRICTION LOSS PREVENTS US FROM DELIVERING WATER IN A TIMELY MANNER, IT ALSO LIMITS THE QUANTITY WE CAN DELIVER. IT GETS ADVANCED, IT GOES TOO FAR WITHOUT SOME KIND OF REMEDIATION, IT CAN ACTUALLY BLOCK THE FLOW IN PIPELINES."*

Pipes as large as a foot in diameter can be completely plugged in a very short time. Nibling says the damage doesn't stop there:

<<ACTUALITY: FRED NIBLING 02>>

*"THEIR FECAL MATERIAL AND THE BIOLOGICAL WASTES THAT THEY GENERATE SERVES AS A FOOD SOURCE FOR BACTERIA WHICH LIVE IN AMONG THE MUSSELS IN THEIR COLONIES. THIS PRODUCES A CORROSIVE TYPE ENVIRONMENT WHICH CAN DAMAGE METALLIC SURFACES SUCH AS STEEL STRUCTURES"*

The damage caused by these infestations costs taxpayers billions of dollars in repairs. Energy losses caused by reduced water flows mean pumping systems have to work harder to keep up and will wear out more quickly. Shell fragments from dead mussels can clog up cooling systems, requiring expensive screening and filtering equipment. That leads to the cost of renewable hydro power rising. The overall loss of efficiency could mean more reliance on carbon-generating fossil fuels to make up the difference.

Stephanie Jordan says that recreational uses of the waterways are also severely impacted:

<<ACTUALITY: STEPHANIE JORDAN 03>>

*“THEY CAN SOMETIMES MAKE WATERS, RIVERS, LAKES UNUSABLE BY BOATERS AND SWIMMERS. ESPECIALLY WHEN THEY’RE CLOSE TO THE SHORE, THEY CONTAMINATE THE SHORELINE. AS THE COLONIES GET LARGER, THEY MAY GET JUST REAL POLLUTED, THEY CAN REALLY GIVE OFF A STRONG ODOR, THAT CAN REALLY AFFECT THE AIR QUALITY AROUND THAT AREA*

The health of your bank account can be affected as well, especially if you end up having to replace your boat’s motor or pumps damaged by mussels, which are nearly impossible to remove once they are established.

Mussels are filter-feeders. They trap and eat microscopic plants and animals called phytoplankton and zooplankton that form the basis of the food chain, leaving less for the native species. Curtis Tackett, an Aquatic Nuisance Species Biologist with the Oklahoma Department of Wildlife Conservation, calls them “highly opportunistic”:

<<ACTUALITY: CURTIS TACKETT 01>>

*“THEY REPRODUCE VERY RAPIDLY AND THEY CONSUME LARGE QUANTITIES OF PLANKTON FROM THE WATER COLUMN. SO THE POTENTIAL IMPACTS TO FISHERIES INCLUDE CHANGES IN THE FOOD AVAILABILITY AND SPAWNING AREAS. THIS COULD CAUSE REDUCTIONS IN DENSITY AND BIOMASS OF THE PLANKTON COMMUNITY WHICH MAY RESULT IN REDUCED GROWTH OR ABUNDANCE OF THESE ZERO-AGE FISH.”*

Getting rid of established colonies of Zebra and Quagga mussels is proving to be difficult, both in terms of tenacity and sheer numbers. The few natural predators can’t keep up with the prolific reproductive rate of the shellfish, and chemical countermeasures pose potential impacts on other species and humans dependent on rivers and lakes to provide drinking water. Other biological controls are being studied, but no solution appears to be in sight.

One way mussels are spread across the country the same way they got here in the first place – transported unknowingly by humans. A days fishing or pleasure boating, then moving to another body of water without taking the time to properly clean a boat, trailer or even wading boots, and yet another infestation can take hold hundreds or thousands of miles away from the source.

Reclamation is supporting other local, state and federal agencies working on a collaborative solution to the problem of invasive species and the economic and ecological damage they cause. The focus is on a four-part strategy which includes -- outreach and education—research-- monitoring and prevention of infestation -- and control and mitigation.

Prevention is where the public can help the most by doing their part to avoid giving the mussels a ride to new breeding grounds and thus slowing the spread of the problem.

Curtis Tackett says setting aside a few minutes after a day's fishing or boating can make all the difference in protecting our waterways from long term damage:

<<ACTUALITY: CURTIS TACKETT 02>>

*THE FIRST THING YOU WANT TO DO WHEN YOU PULL YOUR BOAT OUT, YOU JUST WANT TO GO AHEAD AND VISIBLY INSPECT IT. YOU WANT TO REMOVE ANY KIND OF AQUATIC PLANT, ANIMALS AND EVEN MUD OR DIRT THAT THESE MOLLUSKS COULD BE HIDING IN. AFTER YOU'VE VISIBLY REMOVED ALL THESE THINGS, GO AHEAD AND DRAIN ANY WATER FROM YOUR BOAT... THAT INCLUDES THE MOTOR, THAT INCLUDES THE BILGE, THAT INCLUDES LIVEWELLS AND EVEN BAIT CONTAINERS. GET ALL THE WATER OUT OF YOUR BOAT.*

If at all possible, drying your boat thoroughly and letting it sit for a few days in a warm place will greatly reduce the chances of introducing the mussels to your favorite fishing or recreation spot.

Stephanie Jordan tells us there are plenty of resources for more information:

<<ACTUALITY: STEPHANIE JORDAN 04>>

*“THERE IS A WEBSITE, IT'S CALLED PROTECT YOUR WATERS DOT COM, AND THEY HAVE A SHORT ONLINE TRAINING, IT'S FREE TO THE PUBLIC, THEY CAN GO IN AND TAKE THAT AND IT WALKS THEM THROUGH ALL THE STEPS THEY CAN DO AND AT THE END IT EVEN GIVES THEM A CERTIFICATE THAT THEY CAN POST ON THEIR DASHBOARD FOR THOSE AREAS THAT ARE DOING BOAT*

*INSPECTIONS OR ANY OTHER KIND OF INSPECTIONS TO SAY THAT YOU AT LEAST HAD TAKEN THE TIME TO EDUCATE YOURSELF AND BECOME MORE KNOWLEDGEABLE.”*

In short, clean boats and gear will help keep clean waters. As Fred Nibling explains, Reclamation is concentrating on proactive measures, and, with your help, hopes to reduce the spread and impacts of these destructive pests:

<<ACTUALITY: FRED NIBLING 03>>

*“ONE OF THE MAIN THINGS THAT WE NEED TO DO IS MAKE SURE THAT THE PUBLIC IS AWARE OF WHAT WE’RE TRYING TO DO. I REALLY ENCOURAGE THEM TO COOPERATE WITH THEIR WATER RESOURCE AGENCIES AND YOU KNOW..., IF THEY’RE ASKED TO STOP AND CLEAN THEIR BOAT OR ASKED TO STOP AND ALLOW THEIR BOAT TO BE INSPECTED... IF THEY FOLLOW SOME OF THE SUGGESTIONS THAT THEY SEE ON THE SIGNAGE THAT’S PUT UP AROUND THE RESERVIORS OR SOME OF THE BROCHURES THEY RECEIVE...IF THE PUBLIC IS INFORMED AND SUPPORTIVE THIS MAKES OUR JOB A LOT EASIER AND WE CAN DO A BETTER JOB IF WE HAVE THE SUPPORT OF THE PUBLIC.”*

Remember Clean, Drain, Dry. For further information, check out Reclamation’s website at

w-w-w-dot-u-s-b-r-dot-gov-forward slash-mussels

You can also call the Aquatic Nuisance Species Sighting Hotline at

8-hundred-STOP-A-N-S

This podcast was produced by Belongie Entertainment Enterprises for the Bureau of Reclamation, Great Plains Region, Office of Public Affairs.

Reclamation Managing Water in the West. <<music stinger>>