ASU students study unusual cause of sea otter's death

BY ALDEMARO ROMERO
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SPECIAL TO THE SUN

Students at Arkansas State University had the unusual experience of examining the cause of death of a sea otter that died of a strange infection caused by a microorganism known as a morbillivirus.

The animal was a male Washington sea otter, Enhydra lutris kenyoni, found May 21, 2007, on Rialto Beach, Olympic National Park, Wash. It died while being transported to a rehabilitation center.

Sea otters, unlike other marine mammals, have very little body fat to protect them from the cold waters of the Pacific Northwest where they live. They can withstand the cold temperatures thanks to having the densest pelage among all mammals: up to 380,000 hairs per square inch. That, together with seba-ceous glands under their skin that produce an oily substance that covers their hair, allows them to have a waterproof barrier to conserve body heat.

Age among sea otters can be calculated by counting the number of rings in their teeth. Just as trees, each ring represents a year in the life of these animals. They also have a large thoracic cavity that allows them to have large lungs for the constant diving they have to perform off the coast to secure the food they need, mostly consisting of invertebrates.

What was really special about this sea otter was the presumptive cause of death: a morbillivirus infection.

The first indication that this animal died of this unusual disease was the fact that when its brain was examined it showed a condition known as encephalitis. Encephalitis is an inflammation of the brain that is caused by infection. Lab studies confirmed a morbillivirus caused the infection.

Morbilliviruses

Morbilliviruses are organisms that can only be observed using an electron microscope. They are measle-like viruses that cause disease among some animal species. However, this condition was not detected among marine mammals until 1988, raising the possibility of transmission from domesticated animals such as dogs into these sea creatures. Until now this is the first documented case of a morbillivirus incident among sea otters.

Morbilliviruses cause lesions mainly seen in lungs and the central nervous and lymphatic systems. The lymphatic system is a network of conduits that carry a clear fluid called lymph, which plays a major role in the immune responses among many animals.

The incubation period of this virus is unknown but may last a week. Preliminary symptoms are influenza-like and include fever and headache lasting for up to 14 days, followed by coma and seizures.

The real problem with this virus is that it can be transmitted to humans with fatalities occurring in more that 50 percent of cases.

Because of this, students handling the carcass of the sea otter at the mammalogy laboratory of Arkansas State University wore protective gear. The students handling the animal directly wore biosafety suits.

Both the skeleton and the pelt of this sea otter will be exhibited in The Hall of Science in the Lab Science East Building at ASU.

This is not the first time
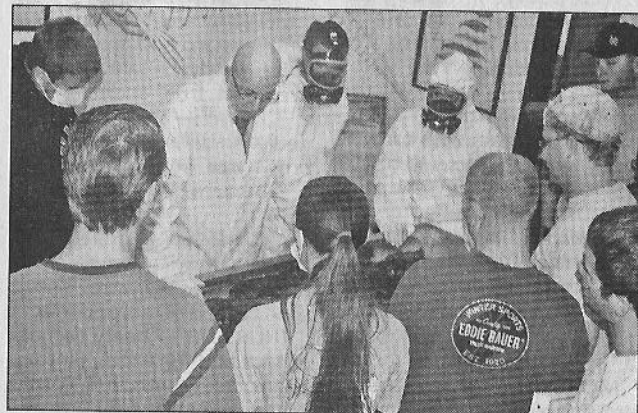
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Arkansas State University students conduct a study of a Washington state sea otter.

a marine mammal was sent by federal authorities to Arkansas State University for study. In 2007, they sent a porpoise from Cape Cod, Mass., to establish its cause of death. After studies that included tissue analysis, researchers and students at ASU determined the animal had died of mercury poisoning.

These studies of the causes of death among animals are a regular feature in some of the courses offered at A-State.

This spring, students of the marine mammal lab course will have the opportunity to conduct similar investigations on an elephant seal from California.

For more information, contact the ASU Dept. of Biological Sciences at biology@astate.edu.

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