

# Researchers investigate new suspect in West Nile deaths of pelicans

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Veterinary entomologist Greg Johnson of Montana State University said earlier this year that he considered the possibility that lice were transmitting West Nile virus to pelicans. He became suspicious after collecting very few mosquitoes in 2006, but seeing pelicans continue to die at a high rate. Johnson discovered previously that the *Culex tarsalis* mosquito is the primary carrier of West Nile virus in Montana and that the Medicine Lake refuge was one of the hot spots for the virus.

Many of the dead pelicans at Medicine Lake had lice crawling inside and outside of their beak, Johnson continued. Mike Rabenberg, deputy refuge manager, said external parasites -- especially pouch lice and feather lice -- are common on the Medicine Lake pelicans. The lice may be more prevalent, he said, on pelicans that are sick or weakened.

The lice were cleared, however, after Johnson sent pelican tissue samples and lice to the Centers for Disease Control and Prevention in Fort Collins, Colo. The lab tested approximately 800 lice, but none was found to have West Nile even though most came from pelicans that tested positive.

Stable flies caught Johnson's attention when he came across a bird with blood on its neck and some flies feeding on the blood during the third week of July. Stable flies look like common house flies, but they have a painful bite. They come from a different family than horse flies or deer flies, however.

"This (the stable fly scene) was very unusual because stable flies are only reported to feed on domestic livestock, humans and companion animals," Johnson said. "There are no reports in the literature of stable flies feeding on domestic or wild birds."

Johnson observed the stable flies feeding on birds several more times. He also collected about 1,300 flies and divided them into 60 groups. Eighteen of those groups tested positive for West Nile virus.

"This is the first report of stable flies feeding on wild birds, or pelicans for that matter, and the first report of stable flies infected with West Nile virus," Johnson said. "These results suggest that stable flies might be involved in amplification and/or transmission of West Nile virus at the pelican colony and possibly could serve as a vector of West Nile virus to other pelicans."

If the theory proves correct, he will have to modify some of his study methods because they currently focus on mosquitoes, Johnson said. He added that the number of captured mosquitoes was high this summer, as well as the West Nile infection rate in those mosquitoes.

As far as the relationship among lice, pelicans and West Nile virus goes, Johnson said the lice created wounds that could be a point of entry for the virus, however they don't pass along the virus.

"I don't think they are playing a primary role in West Nile transmission because they don't have to have blood for egg development, energy and survival," Johnson said. "Rather, they feed on epidermal or skin cells which creates wounds, causing blood to exude and then they feed on the blood. The wounds they cause may provide entry sites for West Nile virus, and the young pelicans can get infected that way."

Source: Montana State University

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