

## **Encephalitis – EEE and LAC**

### **Eastern Equine Encephalitis (EEE)**

*Eastern Equine Encephalitis is a Class B Disease and must be reported to the state within one business day.*

Eastern Equine Encephalitis (EEE), an alphavirus, was first recognized in 1831 during an outbreak when over 75 horses died in Massachusetts. The virus is transmitted by mosquitoes which occurs often in the eastern half of the United States where it causes disease in humans, horses, and in some bird species.

The majority of human EEE infections are either asymptomatic or produce nonspecific flu-like syndromes. Infection is thought to confer life-long immunity against re-infection. Severe disease is occasionally seen in children younger than 15 years of age and is more common in adults older than 50 years of age. The incubation period is typically three to ten days. Treatment is generally supportive. Approximately one-third of those who develop clinical encephalitis from EEE, die from the disease. Among those who recover, half will suffer mild to severe permanent neurologic damage, many requiring permanent institutional care.

In addition to illness in humans, EEE virus can produce severe disease in horses. Since horses are outdoors and attract masses of biting mosquitoes, they are at high risk for contracting EEE when the virus is circulating in the mosquito population. However, there is a vaccine available to protect equines.

The arbovirus surveillance program monitors for cases of EEE in horses. Human cases are usually preceded by those in horses and are exceeded in number by horse cases.

Historically, human EEE cases in Louisiana have been sporadic, with no more than two to three cases every few years. (Figure 1 and 2)

Figure 1. Human Eastern Equine Encephalitis cases - Louisiana, 1960-2010

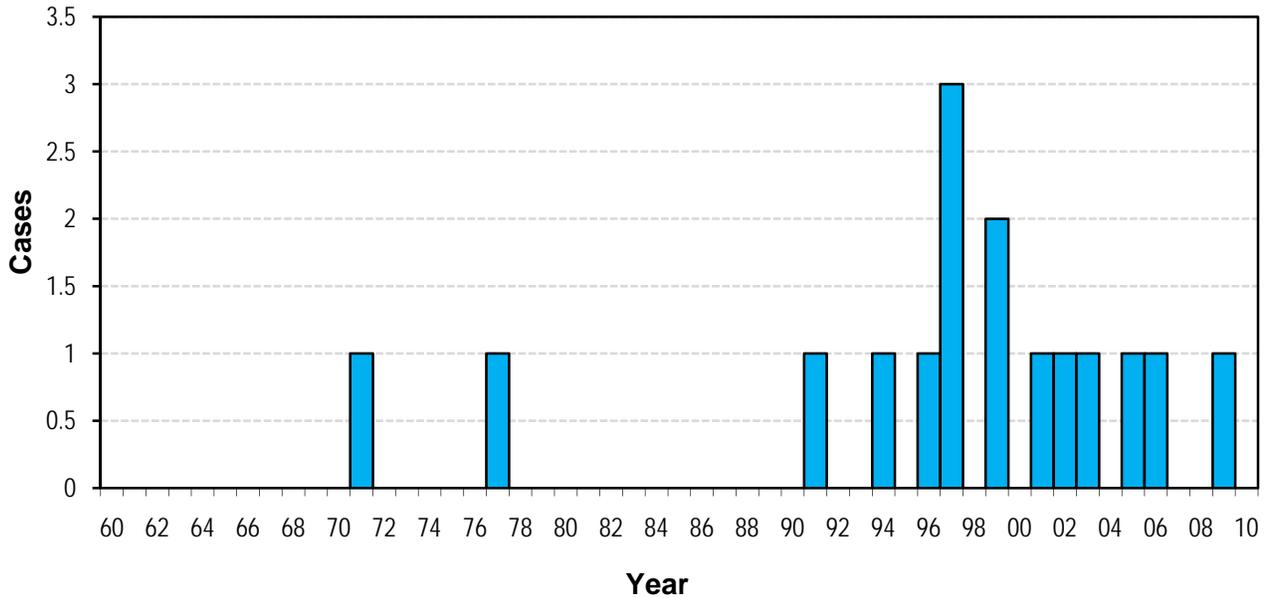
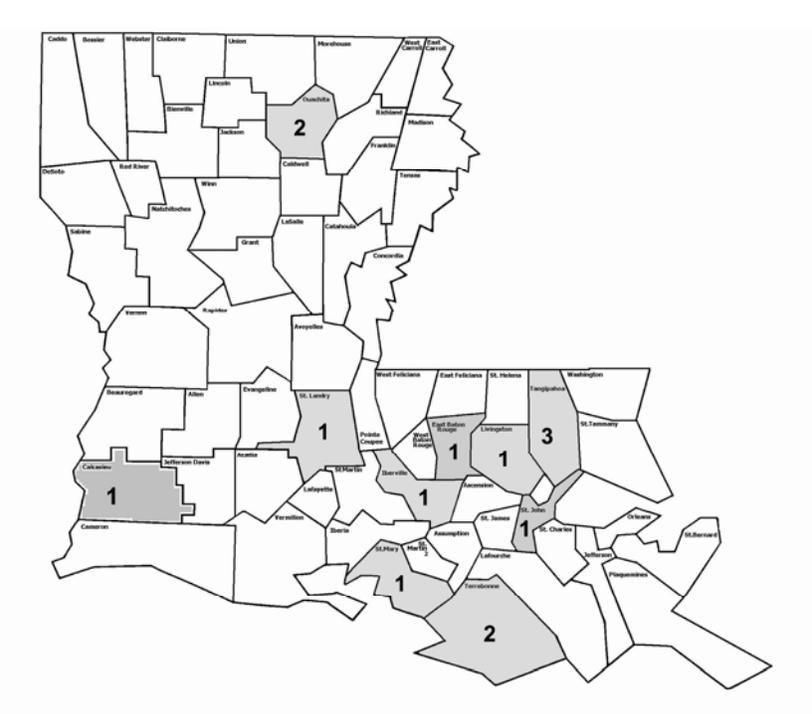


Figure 2. Geographic distribution – human Eastern Equine Encephalitis cases Louisiana, 1990-2010



The EEE virus is sustained in freshwater swamps in a cycle involving birds and *Culiseta melanura* mosquitoes, a species that rarely bites humans or horses. Epidemics in horses and

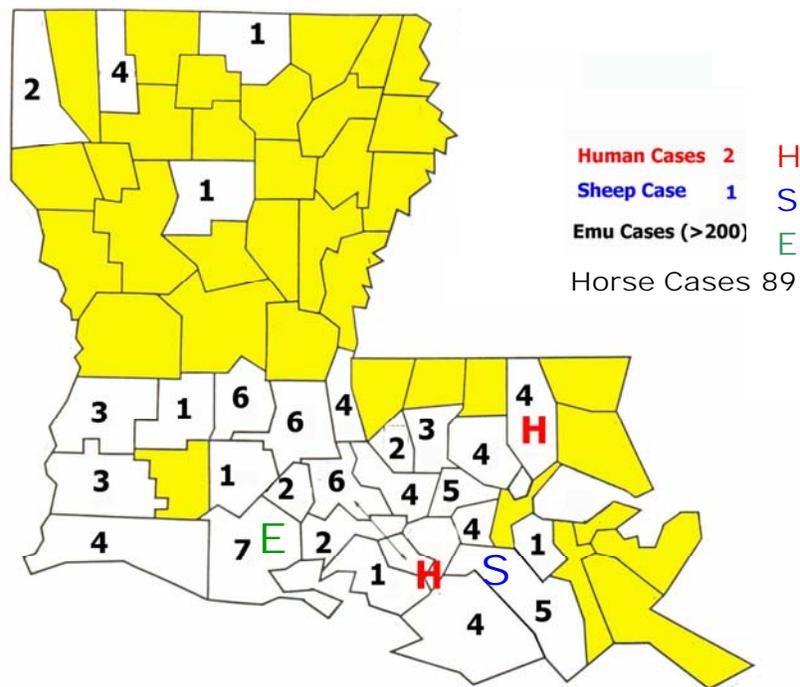
humans occur when other mosquito species such as *Coquillettidia* and *Aedes* become infected and create bridges between infected birds and uninfected mammals. During late summer and early fall, mosquitoes leave the swamps for drier, forested habitats. As human habitats encroach into such wildlife areas, it is expected that the number of EEE cases will increase.

**EEE Outbreak of 1999**

Two human cases of EEE were reported in Louisiana in 1999. One of the cases was a 47 year old male from the Lafourche/St. Mary border infected in June. The other case was a 44 year old female from Tangipahoa Parish infected in July. Both people survived.

Between May and December of 1999, there were 97 lab-confirmed cases of EEE reported in horses from 32 parishes. Initial cases were reported from southeast Louisiana (St. Mary, St. James, Assumption, Lafourche, Terrebonne, St. Charles and Ascension parishes). Later cases were reported from Tangipahoa, Livingston, Pointe Coupee, West Baton Rouge, East Baton Rouge, Iberville, St. Landry, Calcasieu, Beauregard, Vermillion, Iberia and St. Martin parishes. Most of the cases occurred in the southern half of the state. (Figure 3)

Figure 3. Eastern Equine Encephalitis cases - Louisiana, May-October, 1999



The majority of affected horses were unvaccinated, which contributed to a high animal mortality rate. In addition to the 97 horses with confirmed infections, numerous other horses

reportedly died with encephalitis-like illness that could not be confirmed because blood samples were not submitted.

In June of 1999, Vermilion parish reported the death of more than 200 emus, ostrich-like birds raised commercially, which are unusually susceptible to EEE.

### **EEE from 2000-Present**

In 2000, no human cases of EEE were detected and only five cases of EEE in horses were confirmed. One case occurred in each of the affected parishes, with a date of onset ranging from the end of March to early September.

In 2001 one human case was reported in Livingston Parish and sporadic cases of EEE were diagnosed in 23 horses throughout the state.

No human EEE cases were reported in 2002 or 2004. In 2003, one human case was reported in Tangipahoa Parish.

One human case was reported in St. John Parish and East Baton Rouge Parish in 2005 and 2006, respectively. No human EEE cases were reported in 2007 or 2008.

In 2009, one human case was reported in Calcasieu Parish and sporadic cases of EEE were diagnosed in 28 horses throughout the state. However, no cases in horses in Calcasieu were reported.

## La Crosse (California Group) Encephalitis (LAC)

*La Crosse Encephalitis is a Class B Disease and must be reported to the state within one business day.*

La Crosse Encephalitis (LAC), one of the California serogroup bunyaviruses, is transmitted by mosquitoes to humans in the woodland habitats common to great-Lakes and mid-Atlantic states. The majority of LAC infections are either asymptomatic, or mild febrile syndromes. Severe disease characterized from seizures to even coma is usually seen in children younger than 15 years of age. Neurological sequelae typically resolves within several years.

The main vector of LAC is *Aedes triseriatus*, a widely distributed tree hole breeder that has adapted to small artificial containers resembling tree holes, such as tires, jars, pots, paint cans and pet dishes. There are concerns that *Aedes albopictus*, the Asian Tiger mosquito, which is common in Louisiana, is also a vector. The discovery of LAC virus in wild populations of *Aedes albopictus*, coupled with the mosquito's expanding distribution in the southeastern United States, suggests that this mosquito may become an important accessory vector, with the potential to increase the number of human cases in endemic foci or expand the range of the disease. Mosquitoes become infected from feeding on viremic small mammals such as chipmunks and tree squirrels.

Sporadic human cases of LAC have occurred in Louisiana in the following parishes (Figure 4):

- 2001: Allen (1)
- 2002: Vernon (1)
- 2003: Tangipahoa (1), Calcasieu (1), St. Mary (1)
- 2005: St. Tammany (1)
- 2006: St. Tammany (2), Plaquemines (1)
- 2008: Rapides (1)

