Highlands J virus is an alphavirus transmitted from mosquitoes to songbirds in freshwater swamps. Infections have been reported in penned birds, such as domestic turkeys and young broiler chickens. The virus is rarely seen in humans or horses. One horse death in 1964 was attributed to infection with Highlands J virus. In 1990-1991, four patients in Florida were dually infected with St. Louis encephalitis virus and Highlands J virus. However, exposure to Highlands J virus by itself has not been directly associated with human illness.

Highlands J virus is an indicator that environmental conditions are appropriate for the transmission of other mosquito-borne viruses, especially eastern equine encephalitis virus. The primary mosquito vector of Highlands J virus is the black-tailed mosquito, Culiseta melanura.