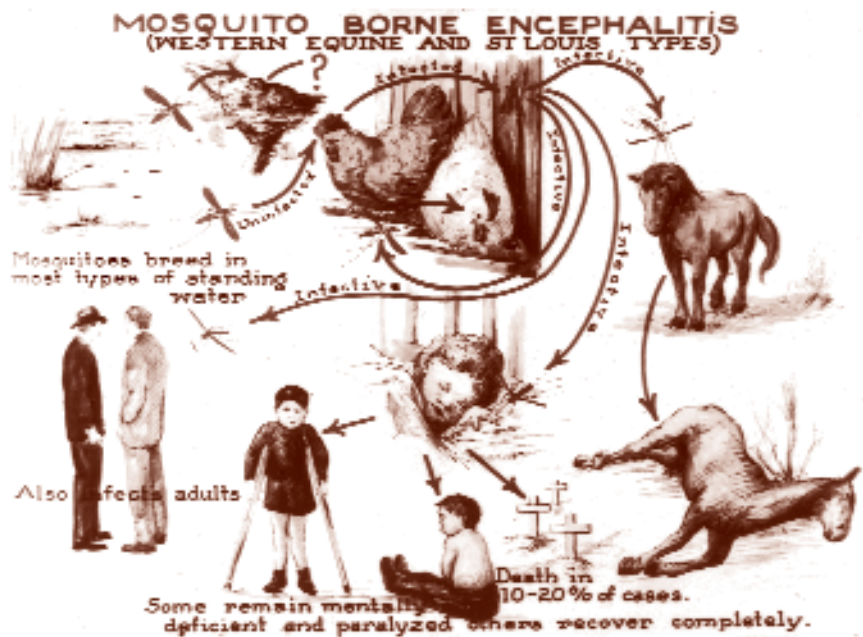


William C. Reeves: A Lifetime of Research Holds Lasting Relevance

By all rights, 86-year-old professor emeritus and former dean William C. Reeves, Ph.D. '43, M.P.H. '49, could be resting on his laurels. Yet, after more than six decades of pioneering our understanding and control of viral encephalitides, Reeves's research is now more relevant than ever. In 1999 West Nile virus arrived and caused an epidemic of encephalitis in New York City. Since then the virus has spread across the continent, borne south and west by mosquitoes and wild birds in a vector-host relationship almost identical to those of Reeves' early research foci—western equine and St. Louis encephalitis viruses in California.

Reeves's research legacies are in full swing as the nation responds to West Nile virus. In stark contrast to the knowledge base of the 1930s and 1940s, when Reeves first confirmed his suspicion that wild birds and mosquitoes were critical as hosts and vectors in the transmission of arthropod-borne viruses, present-day researchers at the Centers for Disease Control and state and local health departments immediately recognized the epidemic potential of West Nile virus.



Originally commissioned by Reeves as a teaching aid, this 1945 illustration conceptualized the transmission cycle of western equine and St. Louis encephalitis viruses and was used to convince members of the California state legislature to fund arboviral encephalitis research.

In formulating their projections for how fast wild birds and mosquitoes can leapfrog West Nile virus into new territory, researchers employ field and laboratory principles developed by Reeves and now consider them standard operating procedures. These include textbook protocols for incriminating a virus and verifying

vector relationships, as well as methods for attracting and capturing the mosquitoes alive, handling them, and assessing their viral baggage.

In addition, by tracking seasonal migration routes of bird hosts and the viral content of dormant overwintering



Left: Reeves (left), with Australian researchers Malcolm Simpson and Nancy Kent, takes a break from fieldwork identifying mosquitoes in Murray Valley, Australia, 1952. Right: Reeves and Simpson collect mosquitoes from pools of standing water.



Reeves (left) and Bernard "Barney" Brookman in 1942 with the then-state-of-the-art light trap they developed to collect live mosquitoes for virus testing.

mosquitoes, as Reeves has done, officials have not been surprised by the virus's diabolical ability to survive winters in temperate areas. "It's truly hard to overstate the importance of Bill Reeves in the field of arbovirology," says medical entomologist Bruce Eldridge, Ph.D., a longtime colleague from UC Davis.

Perhaps most famous is Reeves's establishment of California's Encephalitis Surveillance Program, an early-warning system involving flocks of chickens standing sentinel, as it were, in strategic locations throughout the state. When chickens are bitten by a virus-bearing mosquito, they will develop antibodies for West Nile virus, yet they do not become ill or a source for vector infection. Before blood testing of birds and isolating viruses from mosquitoes were established practices, human or equine illness was the only indicator that arboviruses were present.

"Bill has always been a strong proponent of surveillance," says California Department of Health Services biologist Stan Husted, M.P.H. '76. Husted, a former student of Reeves's, is a leader in California's arbovirus surveillance program. "Bill started it in 1943 with the chickens and, 60 years later, this same method gave us the first indication that West Nile had reached California."

Reeves has many protégés and remains active as a consultant. As former student Roy Campbell, M.D., Ph.D., M.P.H. '90, points out, "Bill Reeves casts a long shadow. He has graduate students in all walks—the military, the CDC, state health departments, academia."

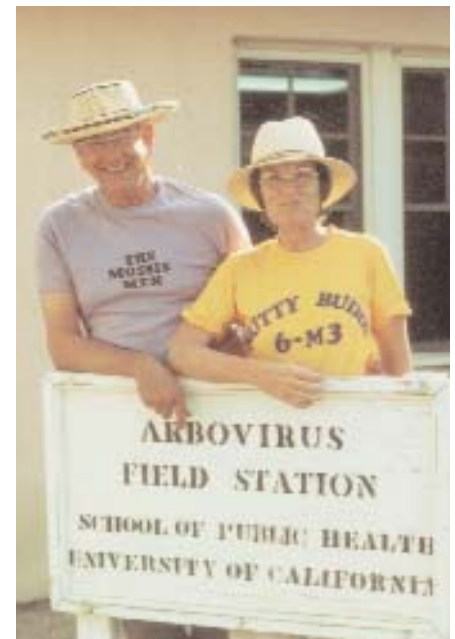
Campbell is chief of epidemiological activity at the Arbovirus Disease Branch at the Centers for Disease Control in Ft. Collins, Colorado, and oversees national surveillance of West Nile and similar viruses in humans. Since early 2000, the CDC has coordinated a West Nile virus-specific conference call involving representatives from every state. Most weeks, Reeves joins the call from Stan Husted's office. His perspective is clearly valued, relates Husted, and Reeves often comments on a new development or suggests ways to use old approaches in current studies.

Reeves has held both informal and formal advisory roles at California's Department of Health Services, the U.S. Army, and the CDC for many years. He has been on the state's Vector Control Advisory Committee (VCAC)

since its inception in 1974, chairing it for many years and contributing expert consultation and advice to the department on vector-borne diseases. "Even today," says Vicki Kramer, Ph.D., chief of the California Department of Health Services' Vector Disease Section, "Dr. Reeves continues to make contributions as a member of the VCAC and through his participation on the West Nile Virus Steering Committee. His historical perspective on the epidemiology and ecology of mosquito-borne viruses provides current researchers and public health officials with unique insight."

It is apparent that Bill Reeves's opinions are unparalleled in the weight they hold among those who strive to protect the public from vector-borne viruses. "The thing about his experience is that he has such a total picture," says Husted. "In this age, when everyone is so specialized, he's got it all." Campbell concurs, "Reeves is a giant in the field of arbovirology. When he talks, people listen." 🍷

— Johanna Van Hise Heart



Reeves with late biostatistician Marilyn Milby, a longtime associate and collaborator at the School of Public Health.