

The Frequency of West Nile Virus-Infected *Culex tarsalis* Mosquitoes in Fremont County, Wyoming

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Introduction

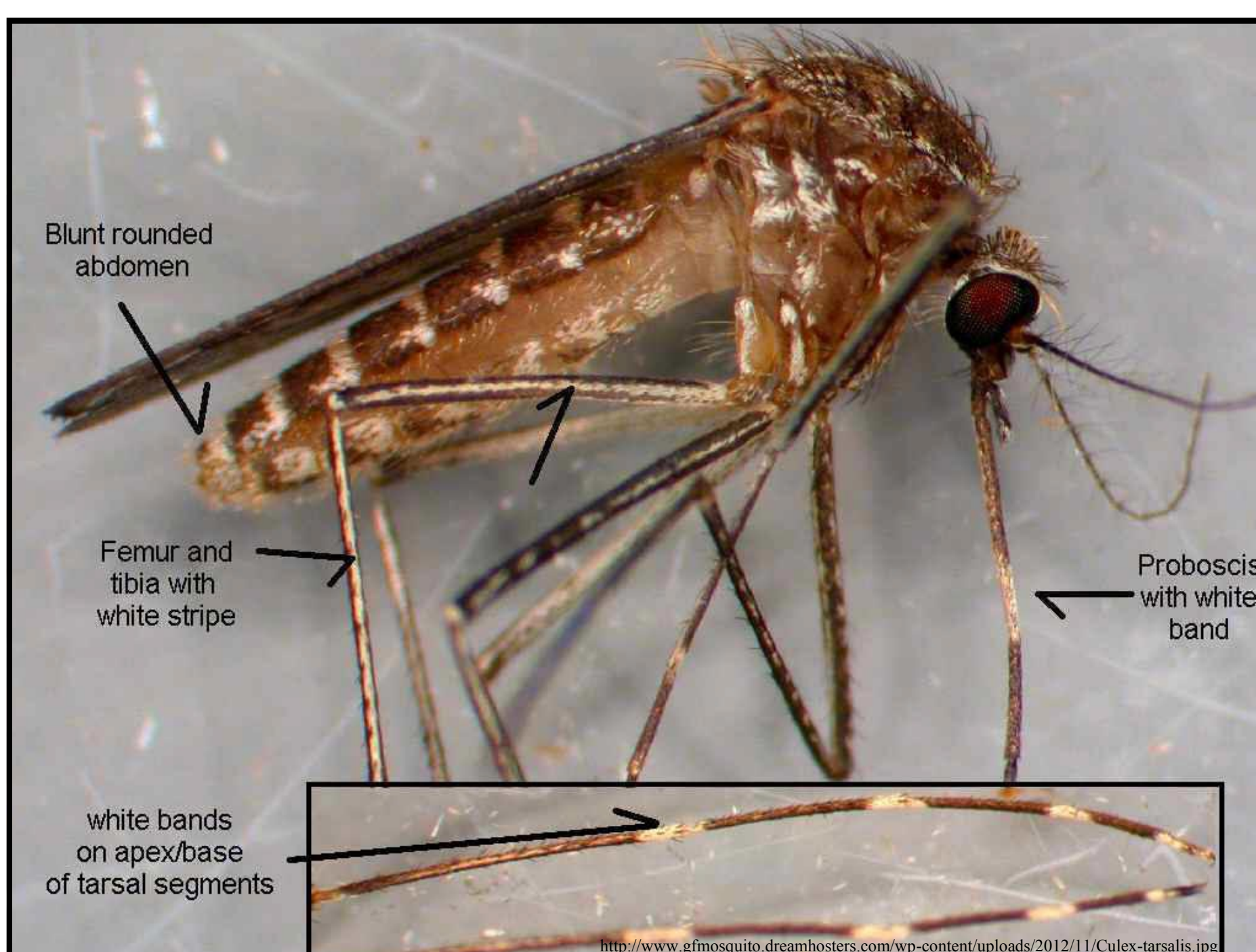
West Nile virus (WNV) is an RNA arbovirus in the Flaviviridae family. Birds are the primary reservoir for the virus, but horses and humans are terminal hosts. Fremont County has been a hotspot for WNV infections. In Wyoming, the primary vector for WNV is the *Culex tarsalis* mosquito.

Objectives

The goal of this research is to determine the frequency of WNV-infected *Culex tarsalis* mosquitoes in three locations in Fremont County, WY: Riverton, Pavillion, and Kinnear.

Identifying *Culex tarsalis*

The main features used to identify *Culex tarsalis* are thick white bands located on the proboscis and the white bands striping their legs. This species has a blunt abdomen. Only the female *Culex tarsalis* carries WNV.



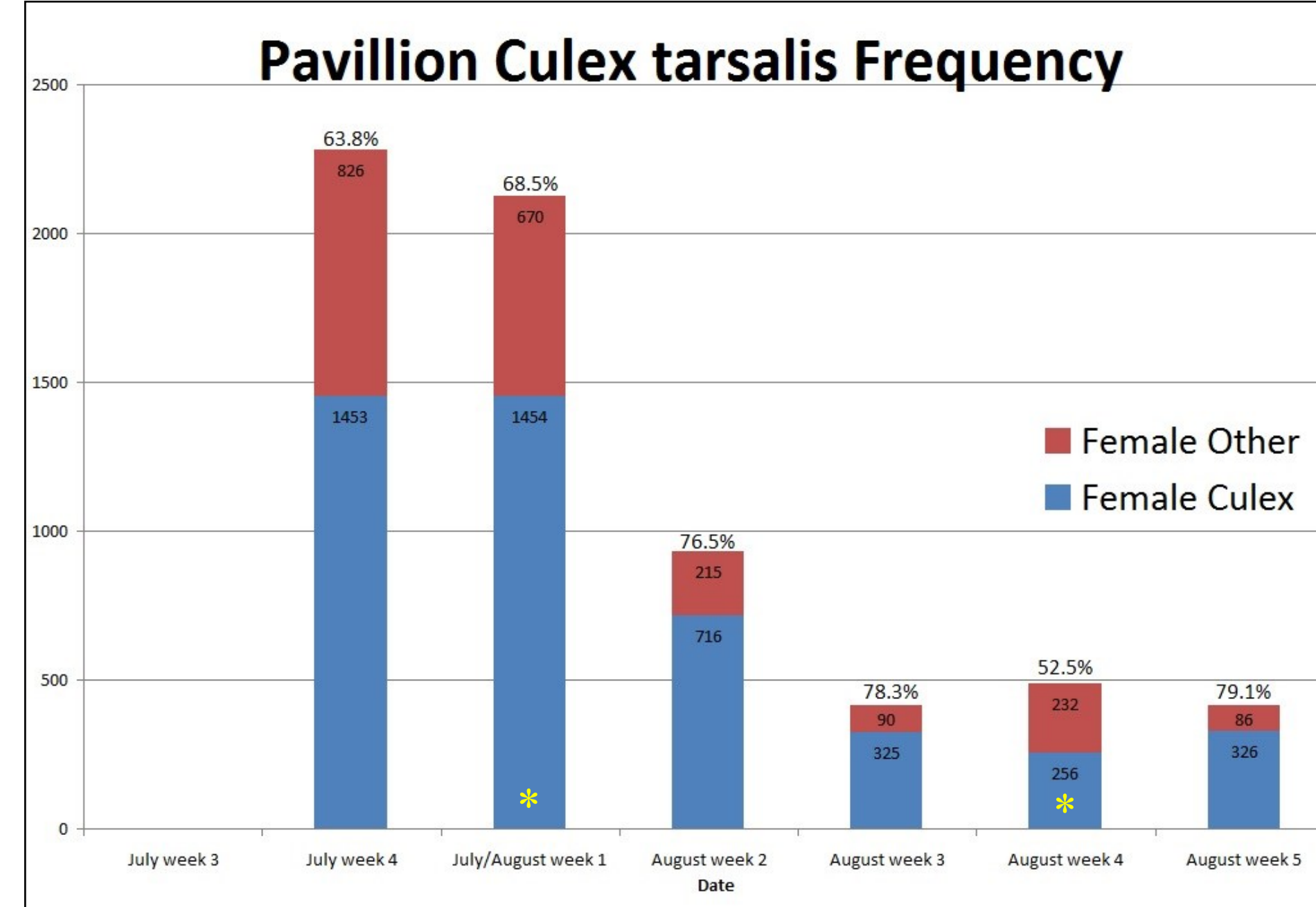
Procedure

In this study, mosquitoes were trapped during a two month period starting on July 1, 2013 and extending to September 1, 2013. Three different trap locations from Fremont County were chosen: Riverton, Pavillion, and Kinnear. Sites differed in elevation and environmental surroundings. During trapping, the CDC light traps were augmented with carbon dioxide. After capture mosquitoes were counted, sorted, and then stored in a -70°C freezer until testing. Female *Culex tarsalis* (the primary vector) were isolated for testing. Testing was accomplished with a RAMP[®] Reader, an immunoassay test using fluorescence tags. Finally, collection methods were standardized including collection sites, collection heights, and delivery of carbon dioxide used to attract mosquitoes.

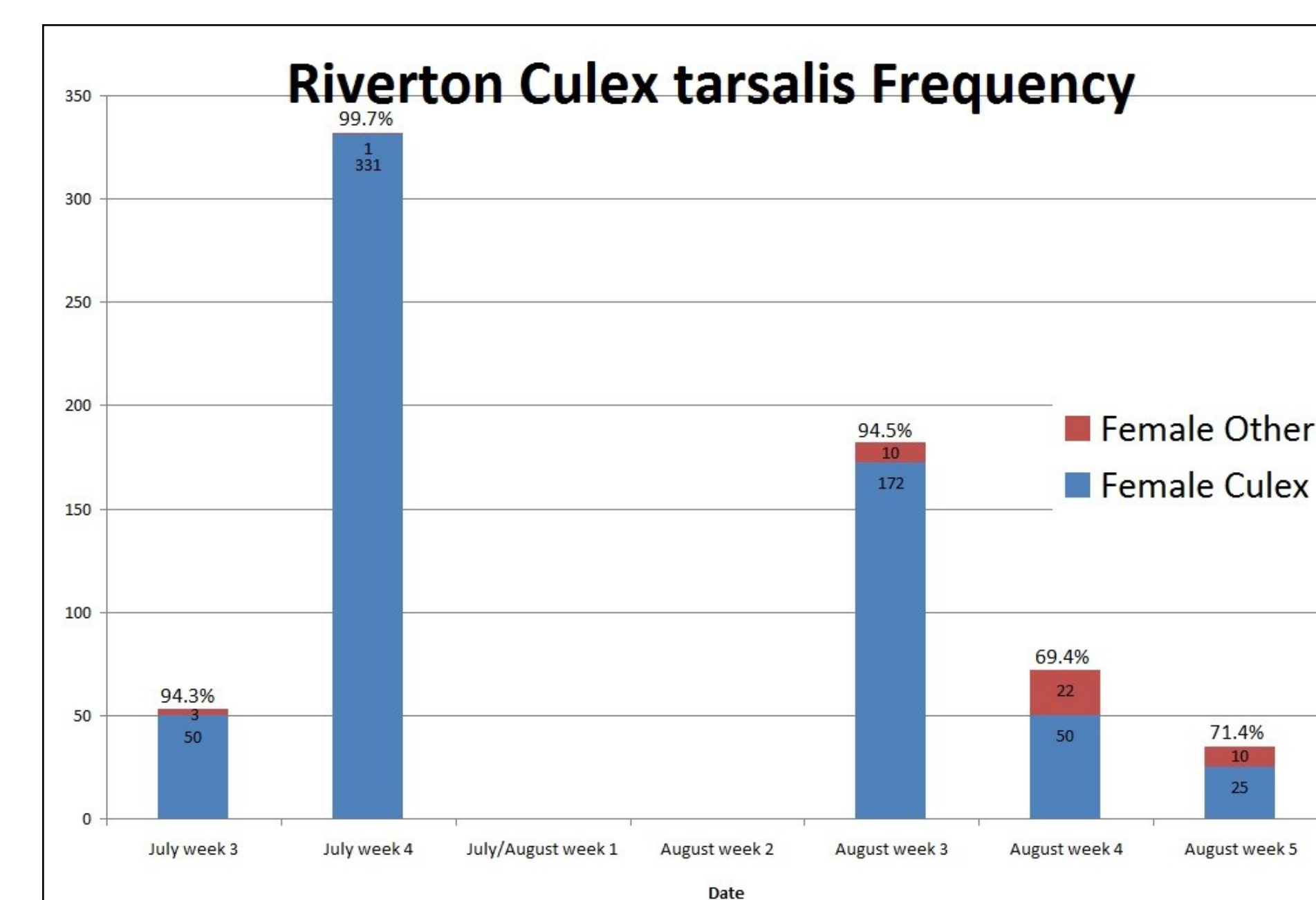
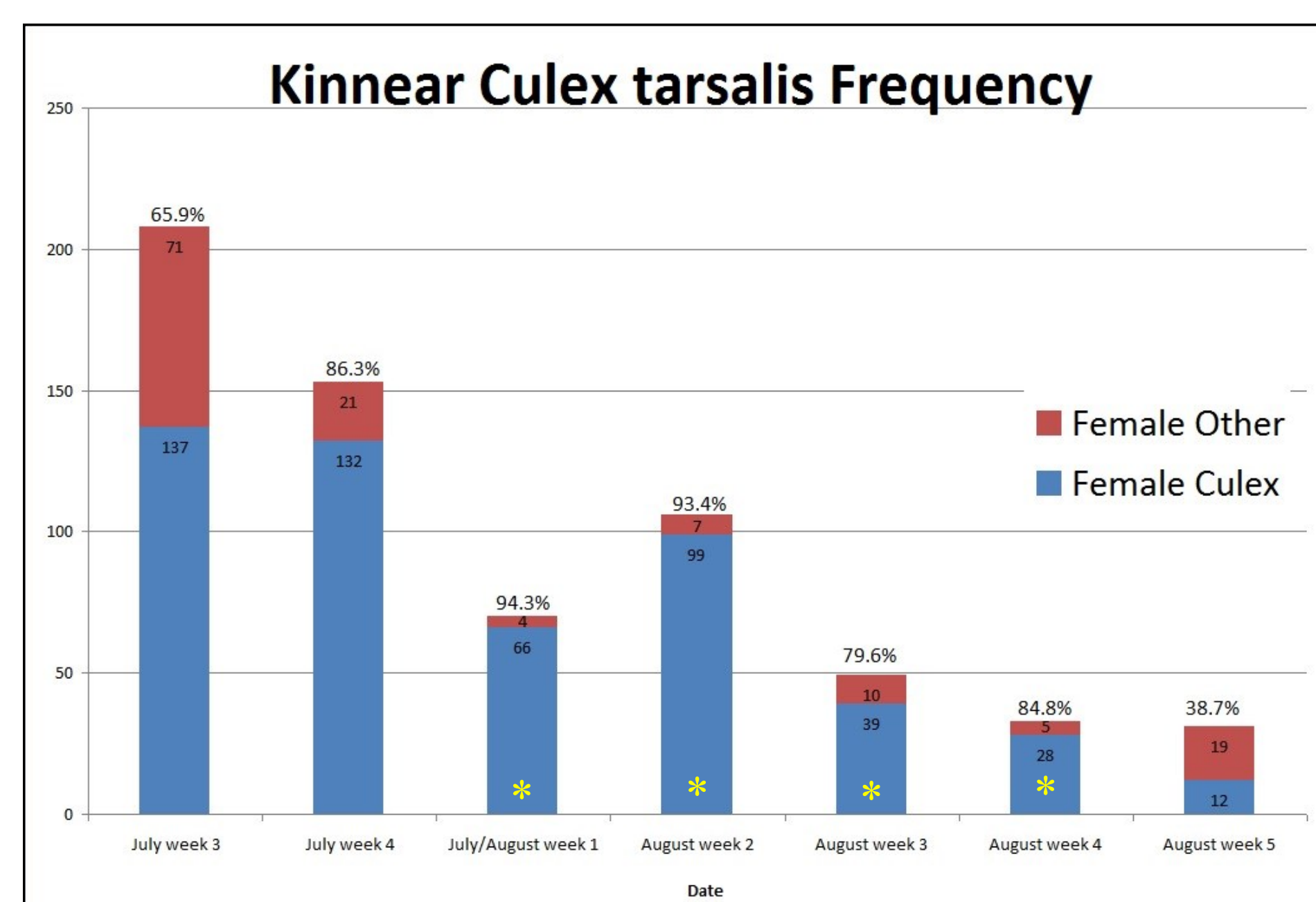


Results

Consistent data was not collected in 2012. Previous collections in 2011 indicated that the primary vector of West Nile virus, *Culex tarsalis*, represents approximately 17% to 36% of sampled mosquitoes depending on location. Updated data from the summer and fall of 2013 indicates that *Culex tarsalis* represents approximately 65.0% to 91.4% of sampled mosquitoes from the three different locations. Furthermore, analysis of the positive mosquitoes from Riverton, Kinnear, and Pavillion are represented respectively: CI 95% (0, 0), CI 95% (0.77, 3.55), and CI 95% (0.021, .093). The extremely low population of infected mosquitoes in each location could possibly explain the recent drop in human cases of West Nile virus.



Mosquitoes Positive for WNV		
Kinnear	Tested	Positive
8/1/2013	48	1
8/8/2013	74	1
8/20/2013	30	1
8/23/2013	27	2
Pavillion	Tested	Positive
8/1/2013	1220	(1-20)
8/23/2013	233	(1-20)



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