

EXTENSION: Geography of the West Nile Virus and Local Mosquito Breeding Areas

Background:

West Nile Virus first appeared in the Western Hemisphere in New York during the summer of 1999, after milder than normal weather allowed mosquito larvae to survive the winter. Since then, the virus has infected humans in 34 states, the District of Columbia.

West Nile Virus causes flu-like symptoms that may lead to fatal encephalitis in people with weak immune systems, such as the elderly. Though not yet proven, some scientists believe the disease may be spread across the country by infected birds traveling along their migration routes. Mosquitoes that act as a vector carry the virus and pass it on when feeding on hosts like birds, livestock, other animals, and people.

Geography plays a role in understanding West Nile Virus and other diseases. Satellite data shows nationwide temperatures, distributions of vegetation, bird migration routes, and areas pinpointing reported cases. The combined mapping helps geographers and other scientists predict disease outbreaks by showing when and where habitats are suitable for the insects to thrive and where the disease appears to be spreading.

Description of Map on Next Page:

The map on the next page shows is a West Nile Virus sample risk map for the United States derived from NASA satellite data and disease control data from the Center for Disease Control and state health departments. The small circles on this map represent uninfected crows reported in 2001. Black dots indicate infected crows, while larger dots reflect a higher concentration of infected crows in one area. The colors on this map represent relative levels of risk for West Nile Virus in 2001 as determined by scientists with NASA's International Research Partnership for Infectious Diseases.

Activity:

The map from 2001 shows that the West Nile Virus had not yet arrived in Arizona. The virus arrived in animals and people who migrated from eastern U.S. sites in 2004. The map without West Nile, contrasted with its presence today, underscores the notion of disease diffusion.

Make an overhead of the map on the next page. Discuss the idea of diffusion of diseases, and the notion that mosquitos breed in water such as old tires, buckets of water, over-watered grass, and other places of still water.

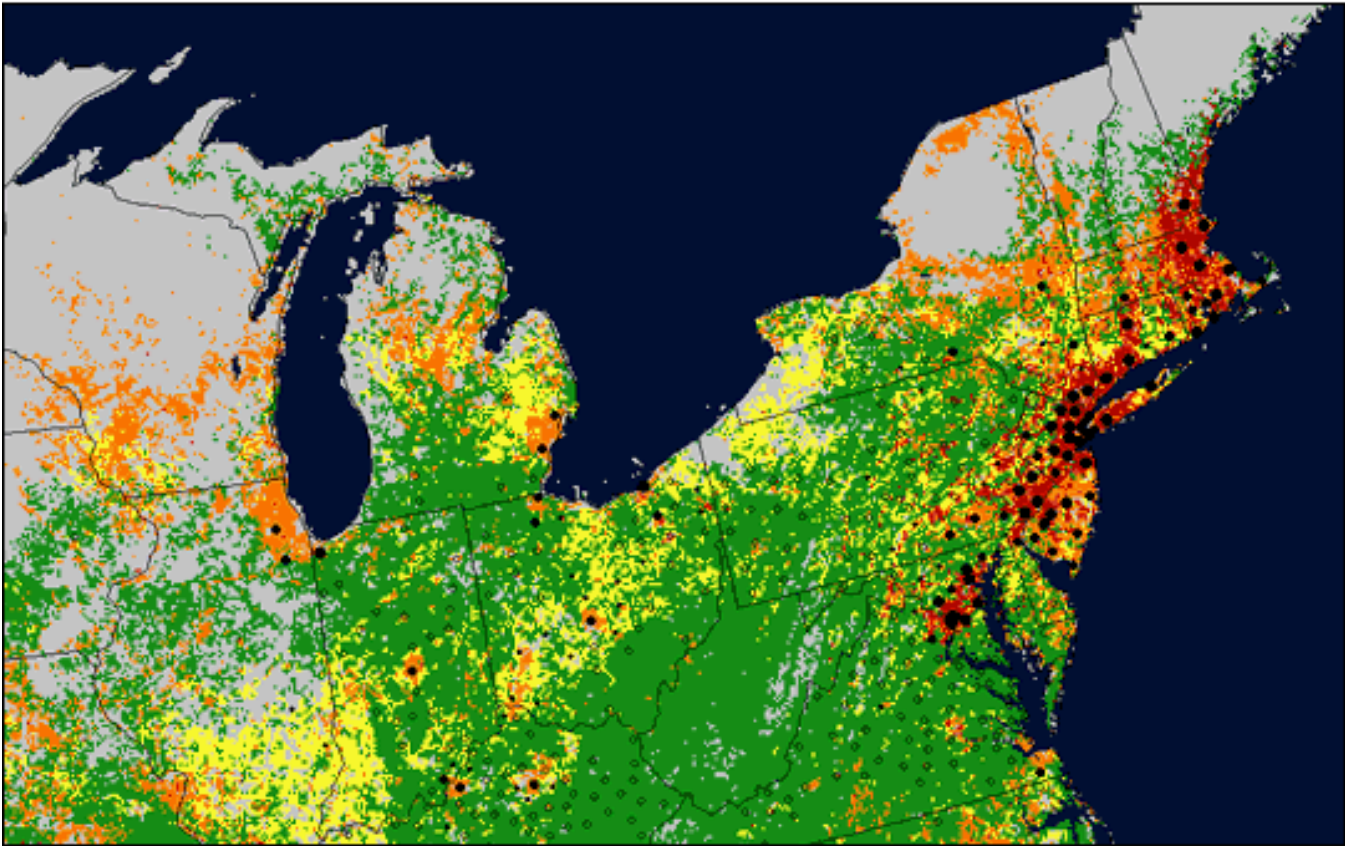
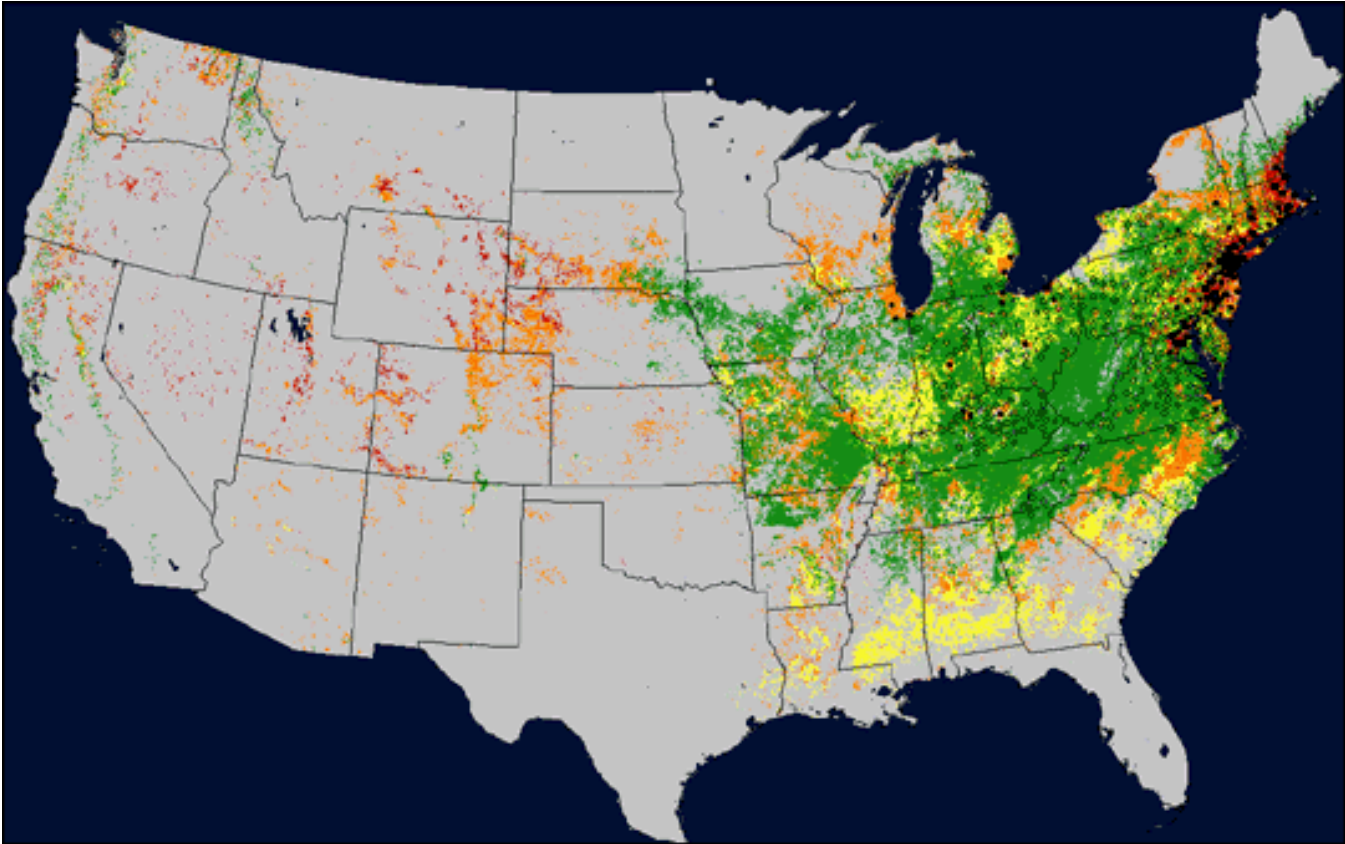
An extension activity would be to discuss where in their local community students might expect to find mosquitos, and how the local population can help reduce the mosquito population by reducing local breeding locations.

Source of Information and Map:

NASA's International Research Partnership for Infectious Diseases

http://earthobservatory.nasa.gov/Newsroom/NewImages/images.php3?img_id=10784

<http://earthobservatory.nasa.gov/Newsroom/NasaNews/2002/2002100810843.html>



○ uninfected crow ● infected crows □ no data no risk ■ increased risk