

SURVEILLANCE OF INFECTIOUS DISEASES IN ARIZONA

An MPH Field Experience Report

By

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ARIZONA DEPARTMENT OF HEALTH SERVICES (AZDHS)

- ◉ Works to ensure the health of residents of Arizona
- ◉ Many different departments and agencies

STATE HEALTH LABORATORY TOUR

- ◉ Observed a necropsy of an cat head to prepare a sample for rabies testing
- ◉ Saw examples of already prepared slides testing for Rabies virus as well as West Nile virus
- ◉ Saw equipment for newborn screening tests as well as testing equipment for many other diseases

MARICOPA COUNTY VECTOR CONTROL

- ◉ Investigates complaints of green pools, insect swarms, and rodents
- ◉ Monitors treatments of previously identified green pools
- ◉ Monitors permanent mosquito traps around the Phoenix valley

MARICOPA COUNTY VECTOR CONTROL

- ⦿ Rode along with Vector Control Specialist Megan Sports
- ⦿ Monitored previously treated green pools
- ⦿ Treated new complaint green pools
 - Put mosquito eating fish into pools to treat
- ⦿ Followed up on a hornet complaint by a homeowner

MARICOPA COUNTY VECTOR CONTROL



Examples of green pools in Phoenix

MARICOPA COUNTY VECTOR CONTROL

Mosquito Fish (*Gambusia Spp*)



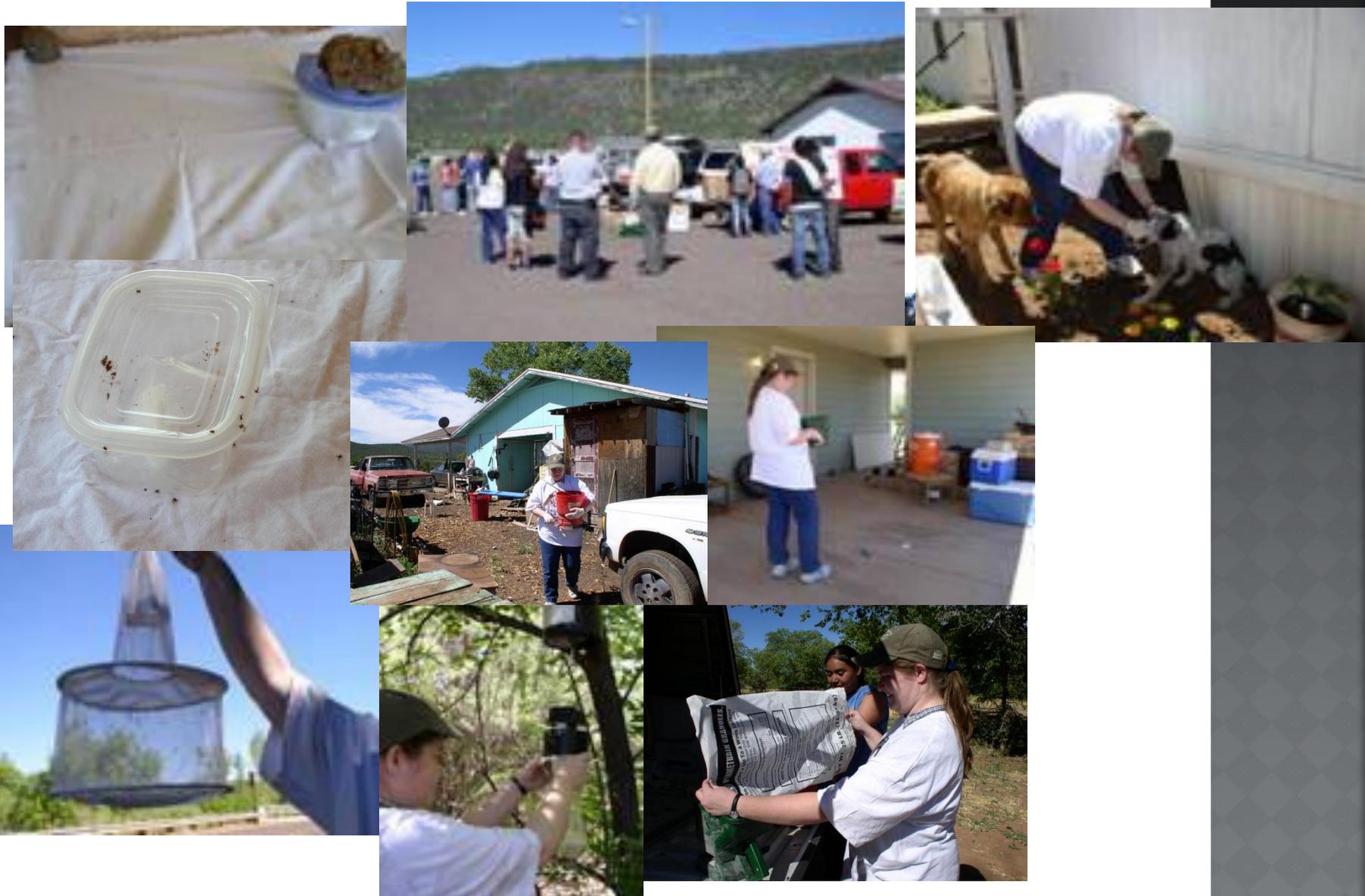
ROCKY MOUNTAIN SPOTTED FEVER (RMSF) CONTROL ACTIVITY AT WHITERIVER

- ◎ RMSF is endemic in the Brown Dog ticks on the White Mountain Apache Indian reservation
- ◎ Every year Indian Health Services (IHS), the Arizona Department of Health Services (AZDHS), and the Centers for Disease Control (CDC) work together to dispense pesticides and tick collars to try and control the tick population

RMSF CONTROL ACTIVITY

- ◉ With Craig Levy from AZDHS
- ◉ Applied permethrin pesticide granules at residences around Whiteriver
- ◉ Set up tick traps at several residences for RMSF testing before applying pesticides
- ◉ Put flea/tick collars on dogs around residences
- ◉ Set up mosquito traps for ancillary West Nile Virus testing
- ◉ All ticks and mosquitoes trapped were taken to the State Lab for testing

RMSF CONTROL ACTIVITY



ARIZONA INFECTIOUS DISEASE TRAINING AND EXERCISE

- ◉ Two day conference for public health practitioners in Arizona
- ◉ Held yearly in Phoenix
- ◉ Attended many talks including:
 - “Are We Done Yet? A Whirlwind Review of the Local Experience of the Flu Pandemic” (Bob England, MD, MPH - Director, Maricopa County Department of Public Health)
 - “Pandemic H1N1 Influenza” (Peter Kelley, MD - Infectious Disease Specialist, AZDHS, Public Health Emergency Preparedness)
 - “Rocky Mountain Spotted Fever” (Marc Traeger, MD - Physician & Preventative Medical Officer, IHS, Whiteriver I.H.S. Hospital)
 - “Rocky Mountain Spotted Fever - South Central Arizona Investigation 2009” (Steven Baty, DVM, MPH - Epidemiologic Intelligence Officer, CDC)
 - “Zoonotic Disease Update” (Craig Levy, MS - Program Manager, AZDHS, Epidemiology & Disease Control, Infectious Disease, Vector-borne & Zoonotic Diseases).

COCONINO COUNTY HEALTH DEPARTMENT

- ⦿ Met with Randy Phillips and Sabrina Ferrat
- ⦿ Discussed questions they wished to add to rabies knowledge survey
- ⦿ Discussed options on how best to inform local veterinarians about educational meetings

RABIES KNOWLEDGE SURVEYS

- ◉ Total of 25 questions about general rabies knowledge and specific Flagstaff area rabies programs
- ◉ Administered to employees and clients of 3 Flagstaff, AZ veterinary clinics
- ◉ 26 total responses

RABIES KNOWLEDGE SURVEYS

- ◎ Most respondents had basic rabies knowledge including:
 - Usually fatal
 - Transmitted by direct contact with blood or saliva
 - Emergency treatment required if exposed
 - Medical treatment if bitten or scratched by an unknown animal
 - What agency to call if they come in contact with a sick or injured animal

RABIES KNOWLEDGE SURVEY

- ◎ Most respondents (20 of 22) had positive feelings toward the rabies quarantine in Flagstaff that required pet owners to keep pets indoors or on leashes during the period when oral rabies vaccine baits were being distributed
- ◎ Most (18 of 22) also had positive feelings towards the wildlife rabies vaccination program that was ongoing in the Flagstaff area

RABIES KNOWLEDGE SURVEYS

- One interesting item was that 8 of 25 respondents thought that birds could carry rabies even though it is strictly a mammal virus
- Majority of the respondents owned animals that had recently been to the vet and were current on their vaccinations

USDA-APHIS WILDLIFE SERVICES

- ◉ They maintain many wildlife programs that protect the health of the animals as well as the humans they come in contact with
- ◉ In Flagstaff working to contain the brown bat rabies variant that is spreading in the skunk and fox populations
- ◉ Disperse oral rabies vaccine baits
- ◉ Trap/vaccinate/release skunks in the area
- ◉ At the end of the summer trap and draw blood on animals to check for rabies titers

ORAL RABIES VACCINE BAIT DISPERSION

- ⦿ Oral rabies vaccine baits were dispersed throughout the Flagstaff area
- ⦿ The baits were to vaccinate the grey foxes in the area
- ⦿ Most were dropped from planes in uninhabited areas
- ⦿ Some were dispersed by hand in populated areas by volunteers

ORAL RABIES VACCINE BAIT DISPERSION

- ◉ With Craig Levy and Mike Fink we were assigned a section of Flagstaff to spread baits
- ◉ Located areas where foxes might frequent
- ◉ Placed baits so foxes would find and eat them

ORAL RABIES VACCINE BAIT DISPERSION



SKUNK TRAP/VACCINATE/RELEASE

- ⦿ Part of the USDA rabies control program in Flagstaff
- ⦿ Oral rabies vaccine baits do not work on skunks
- ⦿ Skunks must be trapped and injected with rabies vaccine in order to be effective
- ⦿ USDA teams also draw blood to test skunks for various diseases

SKUNK TRAP/VACCINATE/RELEASE

- ◉ Two days of training on how to properly set traps and handle skunks with Stephanie Johnston
- ◉ Spent a week setting and checking skunk traps while USDA personnel were at a meeting
- ◉ Placed 10 traps with Sabrina Ferrat, Coconino County Health Department
- ◉ Caught 8 animals with 3 being recaptures
- ◉ Vaccinated and placed ear tags on the new captures, then released them

SKUNK TRAP/VACCINATE/RELEASE



CANINE BLOOD DRAWS

- ◎ A group of 25 male dogs was participating in a USDA chemical sterilization study in Many Farms, AZ
- ◎ They had weekly blood draws and physical exams during the course of the study
- ◎ I was able to assist in the blood draws and exams for the 4th week of the study

WEST NILE VIRUS OUTBREAK

- ◎ By July 23rd 2010 there were 18 confirmed human cases of West Nile virus in the Phoenix area with 2 fatalities compared to 2009 with 20 cases total in all of Arizona and no fatalities
- ◎ AZDHS called and requested the assistance of the CDC in investigating the outbreak

WEST NILE VIRUS OUTBREAK

- ◉ July 30th 2010 the CDC team arrived with epidemiologists and entomologists to investigate
- ◉ The entomologists were sent out to investigate the home sites of the cases as well as the controls
- ◉ The rest of the team conducted phone surveys to collect information

WEST NILE VIRUS OUTBREAK

- ◎ Controls were identified by obtaining lists of people who had been tested for WNV and tested negative
- ◎ Those who lived in areas similar to the cases were then asked to answer the same survey as the cases

WEST NILE VIRUS OUTBREAK

- ⦿ I spent several days out conducting site visits with the CDC entomologist John-Paul Mutebi, PhD
- ⦿ He had a site survey that he filled out at each location to determine if there were any major differences between cases and controls
- ⦿ One of the major features on the survey was whether or not there was flood irrigation in the neighborhood
- ⦿ Other criteria included the number of open containers and any other standing water

WEST NILE VIRUS OUTBREAK



WEST NILE VIRUS OUTBREAK

- ◉ I also spent a couple of weeks in the office assisting with identifying controls
- ◉ I sorted through lists provided by local laboratories to determine who qualified as controls
- ◉ Once they were identified they were contacted as stated above

WEST NILE VIRUS OUTBREAK

- When the CDC team left August 17th there had been 54 confirmed human cases with 4 deaths in Maricopa county, all along the same main road
- Overall in 2010 there were:
 - 166 cases of WNV statewide with 115 of those being in Maricopa county
 - there were 14 total fatal cases

WEST NILE VIRUS OUTBREAK

- ◎ AZDHS and the CDC were planning further studies in birds and mosquitoes to determine the cause
- ◎ The results of the investigation are not currently available to me

CONCLUSION

- ◎ These experiences showed the many sides of public health even just within infectious diseases
- ◎ They were good educational experiences
- ◎ Allowed me to learn new skills and practice different types of surveillance activities

ACKNOWLEDGEMENTS

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