

Profile

I was born and raised on the Eastern Shore of Maryland and spent my childhood out on the waters of the Chesapeake Bay. While working in the summers with my father, a Waterman, harvesting blue crabs, I gained an appreciation for how changes in the environment on land and in the water affected the blue crab harvest. I pursued a Bachelor's Degree in Wildlife Ecology at the University of Maryland and spent several summers working in the Costa Rican rainforest and gained an interest in tropical forest ecology. I am currently pursuing a master's degree in wildlife ecology from the University of Florida. As part of my Master's thesis I am currently in my third month under the Fulbright Scholarship, studying species encroachment into urban areas in the Philippines.

How did I get involved?

The outbreak is centralized around the Subic Bay area and the surrounding tropical forest preserves. For the last month I have been working on studying insectivorous bat populations at the Roosevelt Forest Preserve and the Bataan National Park. I've also been working with a group from the University of the Philippines trapping and tagging monkeys and other small mammals. When the outbreak began, I heard on the news that some tourists from the US and Germany fell ill after coming home from their vacation in Subic Bay. Given our experience working in the area, my working group met with an EIS officer sent by the CDC and assisted them by collecting samples from both the Roosevelt Preserve and the Bataan National Park. Over two weeks, we live-trapped several species of mammals, reptiles, and birds and then collected blood, and tissue samples from each of them. We collected feces and scouted for animal carcasses collecting samples as we went. We helped pack the samples and sent them off to the CSIRO Animal Health Laboratory in Geelong, Australia which was equipped to test for known and unknown viruses present in this part of the world.

The following are excerpts from field notes and voice recordings

- “...the Philippines are home to the smallest and largest bat species in the world...78 bat species are present across the 7100 islands that make up the archipelago...and some of these bat species are found only in this part of the world...25 species of fruit bat and 53 species of insectivorous bats call the Philippines home”
- “...there are many species of animal, not just bats that are endemic, or found only in the Philippines...”
- “...we found several dead macaques within 500 yards of Hector Salvador's hog farm near the Bataan National Park. Initial observations showed no predation by raptor, reptile or mammal. Samples were collected and given over for analysis...”
- “...on the fifth day of collecting samples in the Roosevelt Preserve, we stumbled across a recently used campsite about 2 miles off the main trails and roads. Manuelo, one of my teammates said it looked like a small logging camp. Logging without a permit was recently made illegal by the President Aquino, but illegal logging is still a major problem on most of the islands. They would harvest hardwood trees (rosewood, teak, and mahogany) cut them into manageable sections and haul them off to be sold on the black market for furniture or other things. Occasionally, the stray endangered animal may be caught and sold. The government is trying their best to regulate and stop the poaching of trees and animals but they are undermanned considering the number of islands that make up the country. Near the fire pit we found leftover bush meat that we thought may be a macaque (pron.“ma-cack”). A few minutes later we found

carcasses of a Large Flying Fox, another macaque and a wild palm civet cat. Samples of uncooked meat were collected and sent for testing...”

- “...we reported the logging camp to local authorities and the next day representatives from the Department of Environment and Natural Resources came to investigate. They brought along some sort of reporter from the Associated Press that was doing a story about deforestation in The Philippines. The reporter asked me questions about species diversity in the area and spoke to Maria, a tree expert that worked with our group...”
- “...we were contacted by residents of a community between Olongapo and San Fernando, in an area between the borders of the Roosevelt preserve and Bataan National Park. The community is about 2.5 miles from the Salvador farm. Several residents had caught and killed bats in their neighborhood. We identified the bats as Small Rufous Horseshoe bats, an insectivorous species, bagged the dead bats for autopsy and collected samples for testing. We also walked the neighborhood at dusk the next day and found 3 Common Bent-wing bats that didn't appear to have died from poisoning or killed by the residents of the neighborhood...”
- “...Our samples were sent to the Australian Lab. The EIS officer collected samples from where the patients lived and worked and from the patients themselves. They also collected samples from the Salvador farm and another pig farm close by, run by Roger Catayas. All these were sent back to Maryland for testing...”

Figure 1. Legends

Sampling and Appearance:

- | | |
|-----------|------------------------------|
| 1- Blood | 4- Carcass, predation |
| 2- Feces | 5- Carcass, no predation |
| 3- Tissue | 6- Carcass, appears diseased |

Viruses present:

- | | |
|--|---------------------------|
| a- from live animal | d- from carcass, diseased |
| b- from carcass, predation | |
| c- from carcass, no predation | |
| "-“ -no significant viral pathogen present | |
| Unk - unknown | |

Figure 1- Summary of Animal Samples collected

Taxa	Common Name	Sampling and Appearance (see legend)	Number Captured (Live/Dead)	Viruses present (# infected, disposition) (see legend for disposition details)
Fruit Bats				
<i>Eonycteris spelaea</i>	Cave nectar bat	1, 2, 3	10 / 0	-
<i>Macroglossus minimus</i>	Long-tongued nectar bat	1, 3, 4	6 / 1	Rabies (1d)
<i>Ptenochirus jagori</i>	Musky Fruit Bat	1, 2	9 / 0	-
<i>P. hypomelanus</i>	Small Flying Fox	1, 2, 3, 6	18 / 6	Unk Filovirus variant (6d)
<i>P. vampyrus</i>	Large Flying Fox	1, 2, 3, 6	23 / 9	Nipah Virus variant, <30% homology (4a) Unk Filovirus Variant (6d, 11a, 3b)
<i>R. amplexicaudatus</i>	Geoffroy's Rousette Bat	1	2 / 0	-
Insectivorous Bats				
<i>Miniopterus schreibersii</i>	Common Bent-wing Bat,	1, 2, 6	11 / 5	Unk Filovirus variant (4d)
<i>Kerivoula pellucida</i>	Clear-winged Woolly Bat	1	1 / 0	Nipah Virus variant, <40 homology (1d) -
<i>Rhinolophus rufus</i>	Large Rufous Horseshoe Bat	1, 3, 6	9 / 2	-
<i>Rhinolophus subrufus</i>	Small Rufous Horseshoe Bat	1, 3, 4, 6	17 / 4	Unk Filovirus variant (4b, 5a)
Primates and small mammals				
<i>Macaca fascicularis</i>	Crab-eating macaque	1, 2, 3, 6	27 / 9	Simian herpesvirus (2a) Unk Filovirus Variant (8d) Simian Adenovirus (6a,b) Unk Papillomavirus variant (4a) Unk Coronavirus (2a, 1b)
<i>Paradoxurus hermaphroditus</i>	Asian Palm Civet	1, 2, 3	10 / 1	-
<i>Sundasciurus philippinensis</i>	Philippine Tree Squirrel	1, 3	15 / 0	-
<i>Apomys microdon</i>	Small Luzon Forest Mouse	1, 3, 4, 6	36 / 11	Mouse cytomegalovirus (7a)
<i>Rattus everetti</i>	Philippine Forest Rat	1, 2, 3	22 / 0	-
Reptiles				
<i>Varanus marmoratus</i>	Marbled Water monitor	1, 3	3 / 0	Reptilian Parvovirus Type 1 (1a)
<i>Ophiophagus hannah</i>	King Cobra	1, 3	1 / 0	-
<i>Hydrosaurus pustulatus</i>	Philippine Sailfin Lizard	1, 2	3 / 0	-
Birds				
<i>Cuculus pectoralis</i>	Philippine Hawk-Cuckoo	1	5 / 0	-
<i>Spilornis holospilus</i>	Philippine Serpent Eagle	1	1 / 0	-
<i>Dendrocygna guttata</i>	Spotted Whistling Duck	1, 3, 4	4 / 1	Gallid Herpesvirus (1a)
<i>Tanygnathus lucionensis</i>	Blue-naped Parrot	1, 2	3 / 0	Avian influenza, H3N7 (1a)

Points to Ponder prior to discussion:

From your profile, what are some important facts you know about the outbreak?

What do you need to know about the outbreak?

What do you believe is the cause and source of outbreak? Why?

How do you think the virus is being transmitted?

Are there any terms on the previous pages that are unfamiliar to you? If so define them