OFFICE OF FISH AND WILDLIFE HEALTH AND FORENSICS
MONTHLY REPORT
February 2022

Jan Lovy, Ph.D., Research Scientist II
Nicole Lewis, M.S., D.V.M, Research Scientist II
Nilanjana Das, B.S., Animal Health Technician (900h seasonal)
Sarah Friend, M.S., Environmental Specialist

FISH AND WILDLIFE HEALTH PROJECT (FW-69-R20)

Diagnosis of Diseases in Freshwater Fish (Job F-1)

Private hatchery health records review for approvals for in-state stocking:

Annual review of fish health records was completed for private commercial hatcheries wishing to be approved for providing fish for in-state private stocking. This year 13 private fish hatcheries have been approved.

Diagnosis and research of Diseases in Marine Fish (Job F-2)

Vibrio anguillarum bacterial growth study:

Vibrio anguillarum is the bacterium associated with seasonal mortality of Atlantic menhaden, causing neurologic disease in fish. We conducted a bacterial growth study to determine temperature and salinity thresholds for *in vitro* growth of the bacterium. Four replicates were run of bacterial growth on TSA media supplemented with 2% NaCl incubated at the following temperatures: 4, 15, 25, and 37°C. Growth occurred at all temperatures, though was most efficient at 25°C. Slow growth at 4°C indicates its ability to grow at low temperature, and moderate growth at 37°C indicates that it can grow at mammal/human body temperatures. We also tested various concentrations of NaCl to determine growth thresholds in salinity (0%, 2%, 4%, and 6%). Growth was confirmed in all groups indicating a high threshold for growth in low to high salinity levels. Optimal growth occurred in 0% and 2% NaCl. Note that these figures are for *in vitro* growth on plates and were semi-quantified with the quadrant streak plate method.

Atlantic Menhaden project: data analysis and manuscript draft

Histopathological evaluation of Atlantic menhaden from multiple mortality events was completed. Most common histological findings were hemorrhagic meningitis and encephalitis associated with bacterial infection, and interstitial cellular necrosis in spleen and kidney. These findings were associated with *Vibrio anguillarum*. Considerable work has been put into developing a manuscript draft summarizing our findings of the menhaden mortalities associated with *V. anguillarum*. Currently we are working with co-authors to fill in other details of the manuscript.

Viral nervous necrosis virus surveillance in Black Sea Bass:

This year a total of 303 black sea bass were collected in conjunction with the Bureau of Marine Fisheries Artificial Reef Survey. All fish were screened for the marine virus, viral nervous necrosis virus (VNNV), using real-time PCR. Also, biological data and otoliths were collected to better understand the population structure in NJ. A total of 6 virus detections were made. Current and future work includes running PCR and attempting to sequence the genomes of these viruses to determine the genotype present in this species in NJ waters. This is the first detection of this virus in the species and the first in the region. VNNV is known to widely occur and is lethal, particularly to larval and young marine fish. The virus infects the eyes, brain, and other neurologic tissues. It is believed to be less lethal in adult fish, though they may harbor the virus. The virus has been documented to cause mortality in wild fish, though is better known as a virus that can be lethal to young fish in aquaculture.

Wildlife Disease Surveillance and Investigations (Job W-1) and Wildlife Toxicology (Job W-2)

Case updates:

Cotton tail rabbit, Greenwich NJ:

A resident found multiple cotton tail rabbits dead on their property over a short period of time in November 2021 and was able to collect one specimen. On necropsy there was a significant amount of internal hemorrhage as well as hemorrhage exuding from the nose. Two ticks were found on the back leg, and one was saved for additional diagnostics. The animal was negative for rabbit hemorrhagic disease and toxicology tests were also negative. It was determined that the rabbit died from a bacterial infection seen in the liver that likely led to sepsis and death.

White-tailed deer, Denville, NJ:

An animal control officer reached out as an adult doe was seen neurologic and the local PD had recently dispatched it. CPO DellaVella transported the deer to the Clinton Pathology Lab for evaluation. On necropsy there were no obvious findings. The doe had two very early term fawns. Histopathology determined that the deer had severe parasitic pneumonia.

New Cases:

Cooper's Hawk, Franklin Lakes, NJ:

A resident submitted a deceased cooper's hawk found in the Franklin Lakes are to Raptor Trust with the suspicion that the bird had been poisoned. On necropsy there was not evidence of trauma. Internally, the liver and kidneys were extremely dark in color and exuded red-tinged fluid. Avian influenza testing was negative as was lead testing. The bird was found to have rodenticide poisoning as the cause of death.

Grey Squirrel, Woodbury, NJ:
A resident contacted the conservation law enforcement after seeing over 10 dead squirrels in a small area over a short period of time. One squirrel was able to be collected and examined. Externally there was a large abscess on the back of the squirrels' head that was identified to have Staph aureus and Strep pyogenes bacteria. Skin scraping was negative for mites. Internally, there was tan nodules noted in the spleen and a heavy intestinal parasite overburden. Histopathology is pending. Toxin testing was negative.

Opossum, Newton, NJ:
A resident called to report finding a deceased opossum between two vehicles next to his home. He said that at the time of finding there was a lot of garbage around and he was suspicious that the animal had been poisoned. On exam there was blood noted on the muzzle but no other findings. Rabies testing was negative. It was determined that the animal had been poisoned with rodenticide.

Robins, Bay Head, NJ:
A resident contacted USDA WS stating he had found a total of 6 birds on his property recently and had heard that neighbors had reported similar findings. He was able to save the 3 birds he had most recently found, and they were collected for evaluation. On necropsy the three birds had blood in the mouths and two also had blood in the nares. Internally, they all had hemorrhage in the lungs and in their stomachs and intestinal tracts were copious amounts of partially digested berries. It was determined that the birds had become intoxicated by fermented berries, became disoriented and subsequently ran into the residents' window, dying from the resulting trauma.

Meetings:
- Dr. Lewis attended a virtual call with the state Department of Agriculture and USDA partners to discuss preparedness activities in light of the finding of highly pathogenic avian influenza in wild birds in various states and the poultry flock in Newfoundland, Canada.

- Dr. Lewis gave a virtual lecture on Wildlife Disease Outbreaks to students at Delaware Valley University

NON-PROJECT ACTIVITIES:

- Dr. Lewis completed a manuscript review for the Journal of Fish and Wildlife Management.
- Dr. Lovy completed a manuscript review for the journal Aquaculture Reports.