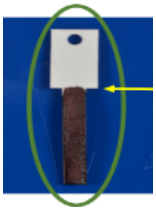

West Nile Virus Phase II –
Serology Study of Wild Turkey Blood Samples
From 2019 Fall Harvested Turkeys

Objective:

- Determine the levels of antibodies to West Nile virus (WNV) in fall harvested wild turkey blood samples over 3 years (2019-21), percentage of turkey that have antibodies to WNV in their blood, distribution across Pennsylvania, and sex/age composition of birds with antibodies versus birds without.
- This will provide baseline data on WNV infection levels in wild turkeys to help us better understand implications of the disease across Pennsylvania in relation to mosquito population levels.

Methods:

- During the fall 2019 hunting season turkey hunters submitted blood and feather samples from 194 harvested turkeys across all Wildlife Management Units with fall seasons.
- Breast and wing feathers submitted were used to confirm age and sex of each turkey.
- Researchers at the Southeastern Cooperative Wildlife Disease Study (SCWDS) in Athens, Georgia analyzed blood samples, once the lab reopened after the COVID19 shutdown.
- The fall harvest was used to sample both male & female turkeys soon after the summer mosquito season.

Results:

1. Of the **194 turkeys, 59 (30%) had antibodies to WNV or a closely related virus**.
2. This percentage is higher than highly susceptible species, such as the greater sage-grouse or the American crow, suggesting some turkeys are surviving infection.
3. Samples submitted from 20 of 21 Wildlife Management Units with a fall turkey season.
4. Sample sizes by WMU ranged from 1 (WMUs 3D & 5B) to 30 (WMU 2D), see table.
5. Results are preliminary. Sampling in 2020 & 2021 will include other northeastern states to develop a better understanding of antibodies levels across the eastern range of wild turkeys and during years of varying mosquito population levels (drier vs. wetter summers).
6. Mosquito populations during summer 2020 were relatively low compared to the record high summer of 2018.
7. Determining antibody levels of wild turkeys in relation to mosquito populations over a 3-year period will provide more insight in how varying factors (like weather, species resistance, habitat, mosquito preference, etc.) may influence WNV transmission.

Funding:

- U.S. Fish and Wildlife Service Multi-State Conservation Grant Program, Pennsylvania State Chapter NWTF, Juniata Gobblers Chapter NWTF, Southeastern Cooperative Wildlife Disease Study (SCWDS) Athens, Georgia, University of Georgia Research Foundation, Inc., & Pennsylvania Game Commission.

Number of turkeys **with antibodies to West Nile virus (WNV)** or a closely related virus **(Positive)** and number with no antibodies (Negative), as determined from blood samples taken from 194 fall hunter-killed wild turkeys in Pennsylvania, 2019. Those with antibodies to WNV survived infection before being harvested. NOTE: This is the first of a 3-year study, and therefore conclusions will be developed after the 2021 sampling.

Antibodies for	**Wildlife Management Unit**																					
WNV, 2019	*1A*	*1B*	*2A*	*2B*	*2C*	*2D*	*2E*	*2F*	*2G*	*2H*	*3A*	*3B*	*3C*	*3D*	*4A*	*4B*	*4C*	*4D*	*4E*	*5B*	*Unknown*	*State Total*
Negative	5	6	8	6	12	25	9	6	10	3	9	5	6		5	3	2	5	6	1	3	135
Positive	**3**	**6**	**3**	**3**	**4**	**5**	**7**	**1**	**3**		**5**	**5**	**3**	**1**	**3**			**5**	**1**		**1**	**59**
Total Samples	*8*	*12*	*11*	*9*	*16*	*30*	*16*	*7*	*13*	*3*	*14*	*10*	*9*	*1*	*8*	*3*	*2*	*10*	*7*	*1*	*4*	*194*