



2021 Putnam County Wild Turkey Research Update

University of Missouri Columbia
Anheuser-Busch Natural Resources Building
Columbia, MO, 65211

Missouri Department of Conservation
3500 East Gans Road
Columbia, MO, 65201



Project Overview

Field work for the 2021 field season concluded on August 15th. We would like to thank the 86 landowners who granted us permission to access 40,448 acres of private property in Putnam County. Without their assistance, this work would not be possible! We have welcomed an additional PhD student to the project: Cara (CJ) Yocom-Russell. The second of four field seasons will begin in January 2022.

Wild Turkey Capture and Tracking

We captured wild turkeys throughout Putnam County during the month of February 2021. We targeted our capture efforts toward flocks of hens. We captured 108 wild turkeys: 54 adult hens, 44 subadult hens, and 10 subadult males (jakes). All captured birds were banded. Fifty-one hens (30 adults, 21 subadult) were fitted with GPS backpack transmitters. The backpacks collect GPS locations at regular intervals and emit a UHF radio signal which allows researchers to locate hens and download GPS data remotely. The distance at which data can be downloaded is dependent upon factors such as terrain and tree cover, but on average we found that we needed to be within 300-m of the hen. We downloaded GPS data from each hen weekly. We have collected > 1.5 million GPS locations so far.

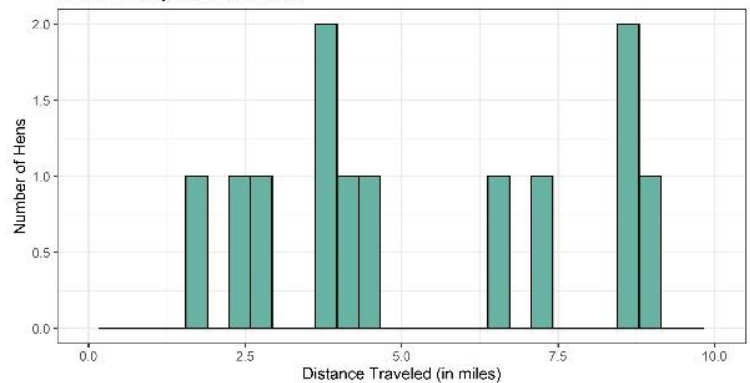


Missouri Department of Conservation Wild Turkey and Ruffed Grouse Biologist, Reina Tyl, and University of Missouri PhD student, Alisha Mosloff, tagging a wild turkey.

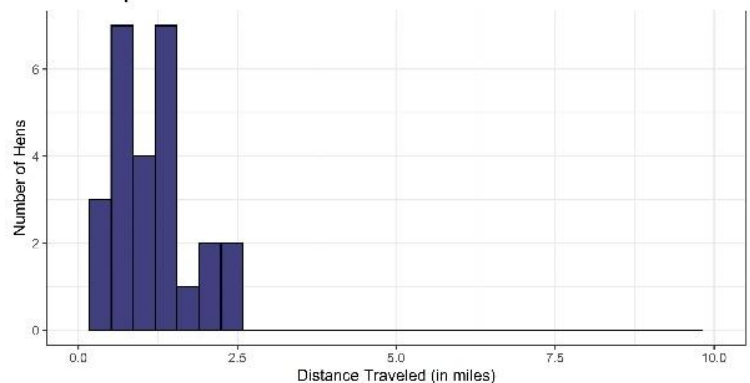
Hen Survival and Dispersal

Of the 51 hens captured and tagged, 46 survived the 2021 field season. Three mortalities were due to predation and two had an unknown cause of death. Subadult hens dispersed an average of 5.24 miles from the location where they were captured to their first nest site while adult hens dispersed an average of 1.17 miles. Three hens dispersed into Iowa in the spring and remained there for the duration of the field season.

Juvenile Dispersal Distances



Adult Dispersal Distances



2021 Tagged Hen Nesting At a Glance

- 79.6 % of tagged hens incubated a nest
- 15.4% Renested following nest failure
- 20.9% of nests hatched:
 - 20.5% of initial nests hatched
 - 25% of 2nd nest attempts hatched
- Median Nest Incubation Date: 5/15/2021



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Nest Survival and Site Selection

Fifty of the 51 GPS tagged hens were alive at the beginning of the nesting season. Of those 50 hens, 39 reached nest incubation. Eight of the 39 initial nest attempts hatched. Four hens whose initial nest failed initiated a second nest (re-nest) attempt, of which 1 hatched. Note that because wild turkeys do not start continuously incubating nests until the entire clutch is laid, it can be difficult to identify nest attempts that fail prior to incubation. Thus, it is possible that some nest attempts may have gone undetected if the nest failed during the laying stage. In regard to nest habitat, 17 nests were located in forest cover while 26 nests were located in open fields.



A successful turkey nest in Putnam County. This nest was located in a field, approximately 10 meters from a forest edge. Of the 15 eggs, 11 hatched.

Brood Survival

An important objective of this study is to measure brood success and if possible, identify causes of poult mortality. To achieve this objective, we attempted to capture recently hatched poults belonging to GPS tagged hens and attach small (< 2-g) radio transmitters to them. This would allow us to monitor individual poults and identify causes of mortality. We attempted brood captures on 4 of the successful nests. We

successfully captured 1 poult from 1 brood but were unable to capture the remaining broods within 3 days of hatching. A hen with another brood was depredated 3 days post-hatch, and therefore, the brood was assumed to be lost as well. The remaining broods have unknown fates because we were unable to access the property being utilized by the broods in order to determine brood fate. We are currently re-assessing our approach to quantifying brood survival based on lessons learned from this field season.



A poult captured on 6/18/2021 in Putnam County. The poult was fitted with a VHF transmitter and then released.

Fun Fact: Three of the hens captured this year were originally banded as part of a wild turkey research project conducted by the Missouri Department of Conservation in Putnam and surrounding counties from 2014-2019. One of the recaptured hens was at least 7 years old this year while the other 2 were at least 5 years old!

Brood Predator Camera Trapping

Predation risk can play an important role in survival and habitat use of wild turkey broods. We surveyed the distribution and habitat use of known brood predators (bobcat, coyote, and fox) from May-August using 62 camera traps distributed throughout Putnam County. Camera trap data is currently being processed.



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Nest Predator Captures

To understand the potential influence of turkey nest predators (raccoons, opossums, and skunks) on nest success, we live trapped and tagged nest predators in April. We can estimate population sizes of nest predators using a technique known as capture-mark-recapture which relies on recapture rates of tagged and released animals. We will relate predator population estimates to nest success and identify possible relationships between the amount of potential nest predators in Putnam County and nest success. We live-trapped 3 areas in Putnam County for 10 days each, using 39-43 wire cage traps per area. Each captured mammal was ear tagged and microchipped the first time they were captured. These tags were then used to identify individuals if they were recaptured. Initial estimates of raccoon and opossum population sizes per acre in the three trap areas are below. While we were also targeting skunks, we were unsuccessful at capturing them.

Trap Site	Estimated Raccoons per acre	Estimated Opossums per acre
1	1.57	0.65
2	2.02	1.11
3	3.34	0.93

Weather Stations

Ten weather stations were deployed throughout Putnam County during the months of May-August. These stations recorded the air temperature every 30 minutes and the amount of rainfall at 0.2mm intervals. These data will be used to examine the relationships between weather and nest and brood survival.



One of the 10 weather stations placed in Putnam County. The weather stations are attached to a t-post with the rain gauge pictured on the left side and the temperature logger on the right.

Vegetation and Arthropod Surveys

Vegetation influences hen survival, nest success, and brood survival while arthropods are a vital food source for young poults. Arthropod availability may vary across habitat types such as forests, grasslands, and agricultural fields. Broods which have access to areas with greater arthropod availability may grow faster and have a greater chance of survival. We established 25 sites throughout Putnam County at which vegetation and arthropod biomass and diversity were sampled bi-weekly during May-August (brood rearing season). Arthropods were actively sampled using a modified leaf blower.



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Questions?

Please contact Alisha Mosloff or Cara (CJ) Yocom-Russell with questions regarding field work or to become involved:

Alisha Mosloff

Graduate Research Assistant
University of Missouri
Arm94b@umsystem.edu

Cara (CJ) Yocom-Russell

Graduate Research Assistant
University of Missouri
yocomrussellc@mail.missouri.edu

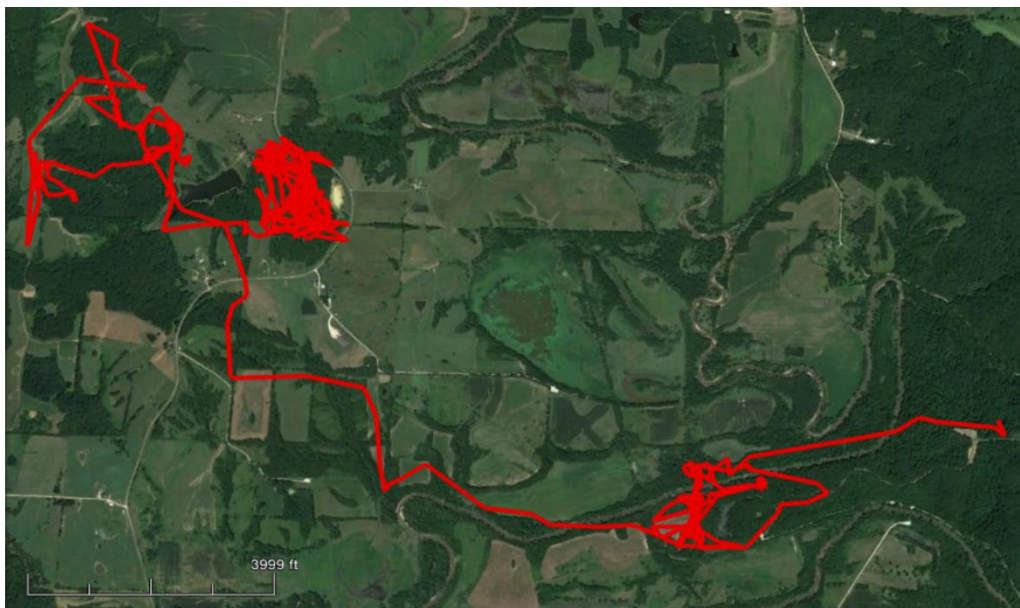
Questions regarding wild turkey management in Missouri may be directed to:

Reina Tyl

Wild Turkey and Ruffed Grouse Biologist
Missouri Department of Conservation
Reina.Tyl@mdc.mo.gov



An example of arthropods collected during a single survey. The insects are stored and will be identified to order in the lab at a later date.



Movement of one adult turkey hen from 4/21/2021 until 5/26/2021.