Spotted Turtle (*Clemmys guttata*) Distribution and Conservation Status in West Virginia

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INTRODUCTION

- The Spotted Turtle (*Clemmys guttata*) is an emydid that occurs in the eastern panhandle of West Virginia

Figure 1. A male Spotted Turtle.

- Prior to 2019, only 3 wetlands were known-occupied in the eastern panhandle (**Fig. 1**)

- Suitable habitat is predicted in the northern panhandle, but occurrence has not been investigated

OBJECTIVES AND METHODS

Objective 1: Wetland Layer
Use Remote Sensing Techniques and GIS to improve mapping of ephemeral wetlands in West Virginia

- Use 3m Digital Elevation Map to create flow accumulation layer
- Assess a variety of terrain analyses and derivatives (e.g. curvature, Topographic Wetness index (TWI), Roughness, Compound Topographic Index (CTI)

Objective 2: State Occurrence and Local Species Distribution Model (SDM)
Create and validate localized SDM for Spotted Turtle across their potential range in West Virginia
- Conduct trap-based rapid and demographic assessments at known-occupied and potentially suitable wetlands in the eastern and northern panhandles of West Virginia (**Fig. 2**)

Figure 2. Promar hoop net used for trap-based population sampling.

PROJECT PROGRESS

Objective 1: Wetland Layer

- Obtained enhanced National Wetland Inventory (NWI) layer for West Virginia

- Obtained 3m Digital Elevation Model (DEM) and created the following layers: flow accumulation, slope, aspect, curvature, CTI, and TWI layers

Objective 2: State Occurrence and Local SDM

- Surveys conducted at 15 sites across 4 counties from 4 April to 20 June (**Fig. 3**)

- New county record for Hardy County (DOR) obtained by Smithsonian Conservation Biology Institute (SCBI)

- 96 captures and 79 unique Spotted Turtle encounters (**Table 1**)

Table 1. Site-specific Spotted Turtle survey results.

Site Code	Spotted Turtle Encounters	Unique Spotted Turtles
WV1	13	11
WV2	18	14
WV3	29	28
WV5	34	24
WV9	1 (Visual)	1 (Visual)
WV15	1	1

FUTURE WORK

Objective 1: Wetland Layer

- Use ephemeral wetland layer as a hydrologic input into SDM

- Ground truth layer accuracy using field data from 240 wetland sites across a gradient of hydroperiod conditions

Objective 2: State SDM

- Use 2019 and 2020 population sampling results as training data for SDM

- Test new wetland layer, and additional wetland and surrounding landscape data as candidate variables for modeling habitat suitability

- Create and compare accuracy of occupancy model and Random Forests species distribution projections
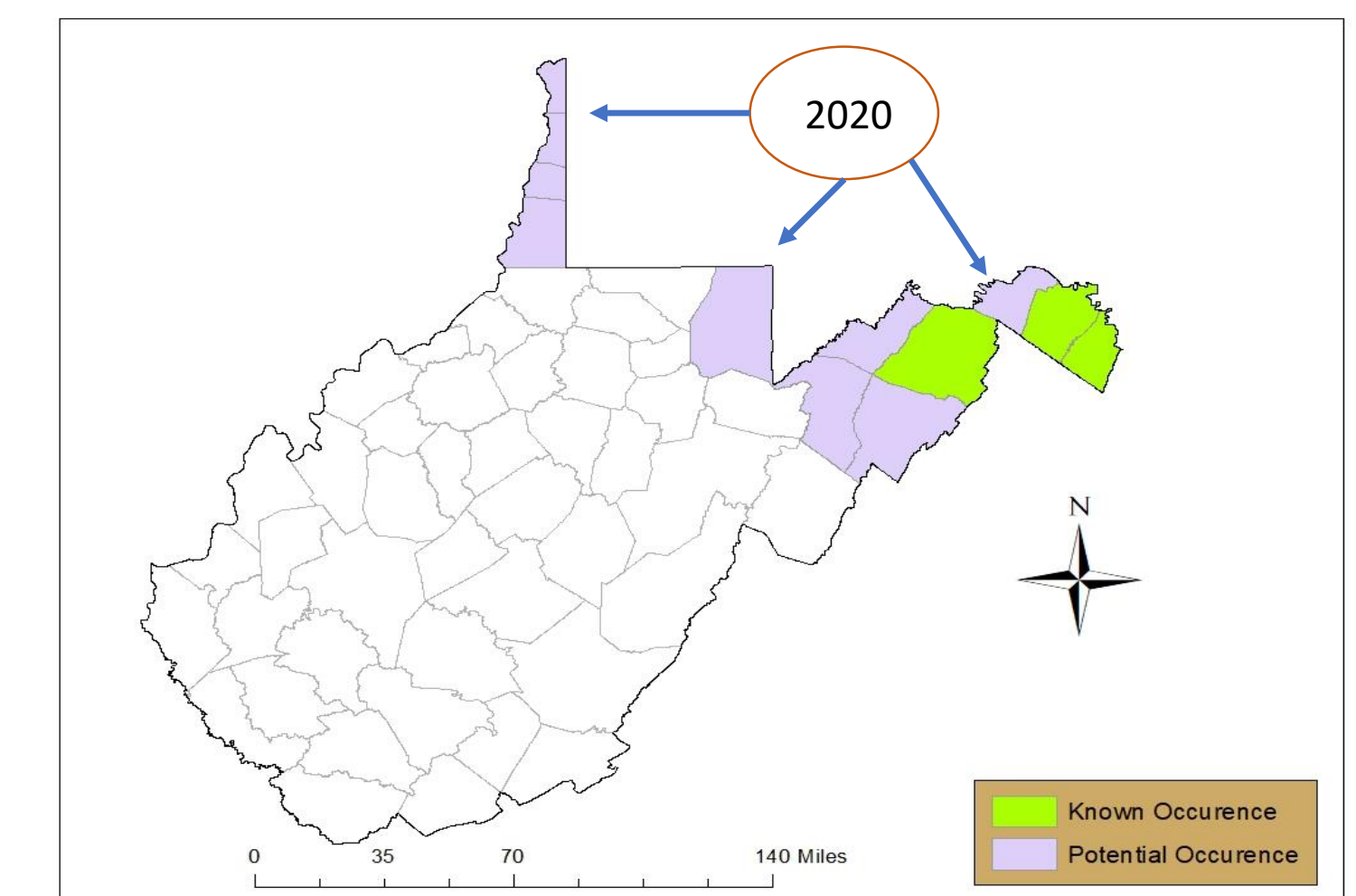

Figure 3. Map of counties with known occurrence (green) and potential occurrence (purple) of Spotted Turtles. Arrows point to anticipated survey area for 2020. Numbers within counties indicate number of wetlands surveyed in 2019.

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