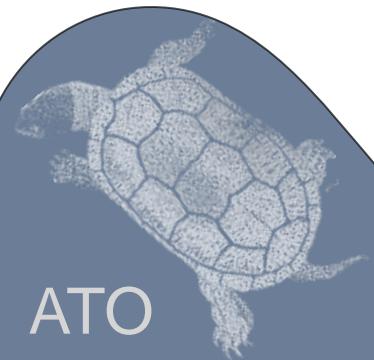


# CONSERVATION PLANNING FOR SPOTTED TURTLE IN THE EASTERN U.S.

EASTERN SPOTTED TURTLE WORKING GROUP  
[WWW.NORTHEASTTURTLES.ORG](http://WWW.NORTHEASTTURTLES.ORG)



ANTIOCH  
UNIVERSITY  
NEW ENGLAND

AMERICAN TURTLE OBSERVATORY



# Spotted Turtle Working Group Partners



**Liz Willey (ATO/AUNE), Mike Jones (MassWildlife), J.D. Kleopfer (VADGIF), Kathryn Lauer & Patrick Roberts (ATO), Lori Erb & Brandon Ruhe (MACHAC), Thomas Akre & Jessica Meck (SCBI), Derek Yorks & Phillip DeMaynadier (MEIFW), Melissa Doperalski & Josh Megyesy (NHFG), Glenn Johnson (SUNY Potsdam), Angelena Ross (NYSDEC), Peter Rosenbaum (SUNY Oswego), Scott Smith (MDDNR), Brian Zarate (NJDFW), Nathan Nazdrowicz (DEDFW), Kevin Oxenrider (WVDNR), Donald Brown (WVU/USFS), Chris Jenkins & Houston Chandler (Orianne Society), Jonathan Mays (FFWCC), Scott Buchanan (RIDE), Brian Hess & Mike Ravesi (CTDEEP) / Kathy Gipe & Chris Urban (PFBC), Lindsay Rohrbaugh (DDOE), Steve Parren (VT F&W), John Jensen (GADNR), Rodney Dyer (VCU), Eric Liebgold (Salisbury University), Julie Thomson, Laura Eaton & Anthony Tur (USFWS)**

**Additional Partners:** North Carolina Wildlife Resources Commission; South Carolina Department of Natural Resources; Virginia Department of Conservation and Recreation, Natural Area Preserve System; The Natural Conservancy Virginia Chapter; Department of Defense PARC; USDA NRCS; USDA USFS George Washington and Jefferson National Forests

# Northeastern/Eastern Regional Conservation Planning Initiatives for today's focal species

Conservation Plan  
for the Blanding's Turtle  
associated Species of Conservation Need  
in the Northeastern United States



Status and Conservation  
of the Wood Turtle  
in the Northeastern United States



Proposal for a Status Assessment  
of the Spotted Turtle (*Clemmys guttata*)  
in the Eastern United States

Made possible by State Wildlife Grants  
and funded by the Competitive Earmarked  
 USFWS



Made possible by State Wildlife Grants  
and funded by the Northeast Regional Conservation  
 NRCC



## Blanding's Turtle (15 years of regional coordination)

## Wood Turtle (10 years of regional coordination)

## Spotted Turtle (4 years of regional coordination)

# Spotted Turtle Competitive State Wildlife Grant

## Hosted by Virginia DGIF, 2017

Proposal for a Status Assessment  
of the Spotted Turtle (*Clemmys guttata*)  
in the Eastern United States



**Objective:** Maintain populations of Spotted Turtles at or above their current levels throughout the region and achieve zero net loss of suitable habitat at high priority sites.

**Project I: QUANTIFY DISTRIBUTIONAL TRENDS AND BASELINES**

**Project II: ASSESS POPULATION STATUS AT MULTIPLE SCALES (establish baselines & prioritize populations)**

**Project III: MANAGE HABITAT AND POPULATIONS**

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**Project I:** QUANTIFY DISTRIBUTIONAL TRENDS AND BASELINES

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**Project III:** MANAGE HABITAT AND POPULATIONS

## Regional Conservation Needs Grant, 2018

Include additional states

Assess region-wide genetic structure, identify distinct/diverse populations

Other local, state, and federal funds

# Spotted Turtle Regional Planning Actions

## Complete/underway

- Develop sampling protocol
- Undertake region-wide sampling
- Long-term site follow-up
- State-specific efforts

## Next steps

- Data analysis
- Status assessment
- Site prioritization
- Conservation plan
- Technical assistance & management actions

# Wetland habitat



# Wetland habitat

Vernal Pools  
Shrub swamps

Emergent marshes

Forested wetlands

Wet meadows & ditches

Reservoirs



Maine (top) and Florida  
(bottom)

Photos: Trevor Persons, Maine  
Department of Inland  
Fisheries and Wildlife (top);  
Jonathan Mays, Florida Fish  
and Wildlife Conservation  
Commission (bottom).



# Standardized Monitoring Protocol

## Regional Spotted Turtle Assessment Protocol

Spotted Turtle Working Group<sup>1</sup>

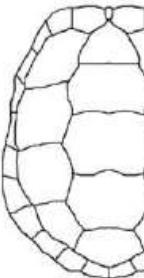
Sponsored in part by the U.S. Fish and Wildlife Service

and the U.S. Geological Survey

This document outlines a  
(Chelonia mydas) population  
protocol is adapted in part  
by the Northeast Blanding's  
US Fish and Wildlife Service  
State and Island Fisheries  
expert teams liaison to Florida.

Two basic methodologies:  
maps. Two levels of map-  
protocol for Rapid Area  
Assessment protocol. A m  
(1) delineate potential Sp  
Google Earth or ArcGIS  
centered on potential Spec  
Turtle-based Rapid Assess  
Rapid Assessment (VRA).  
Traps may be set on transe  
maps every 25 meters for a  
a total of 12 traps. Trap  
and observation time to be  
in excess and during each ex  
the surveyor walks the  
securing start and stop  
surveys within a maximum  
survey time, recording the

Spotted Turtle Individual Form (2/24/19)		Site Name:
		Site Code:
Observer(s):		
Turtle ID#:	Date:	Time:
Cap. Method:	<input type="checkbox"/> Hand <input type="checkbox"/> Trap	Ref. # (circle): 1 2 3 4
Sex:	Coordinates (dd dd dd):	
<input type="checkbox"/> Meas. <input type="checkbox"/> Notched <input type="checkbox"/> Tissue		
SCLmin (mm):		
SPLmin (mm):		
CW (optional):		
PW (optional):		
SH (optional):		
Musg (g):		
Scute morphology:		
<input type="checkbox"/> normal <input type="checkbox"/> irregular		
(specify or mark below)		
Indicate notches and record mark or injuries:		



# Standardized Monitoring Protocol

## Two tiered, nested approach

Rapid Assessments



Demographic Sites

### Objectives

Evaluate distribution, abundance, trends at the **regional scale**

- 1) Quantify population size, structure, and trends at **key sites**
- 2) Inform rapid assessment results

### Field Methods

VRA  
Visual surveys X 3 times / site

TRA  
20 traps X 4 nights / site

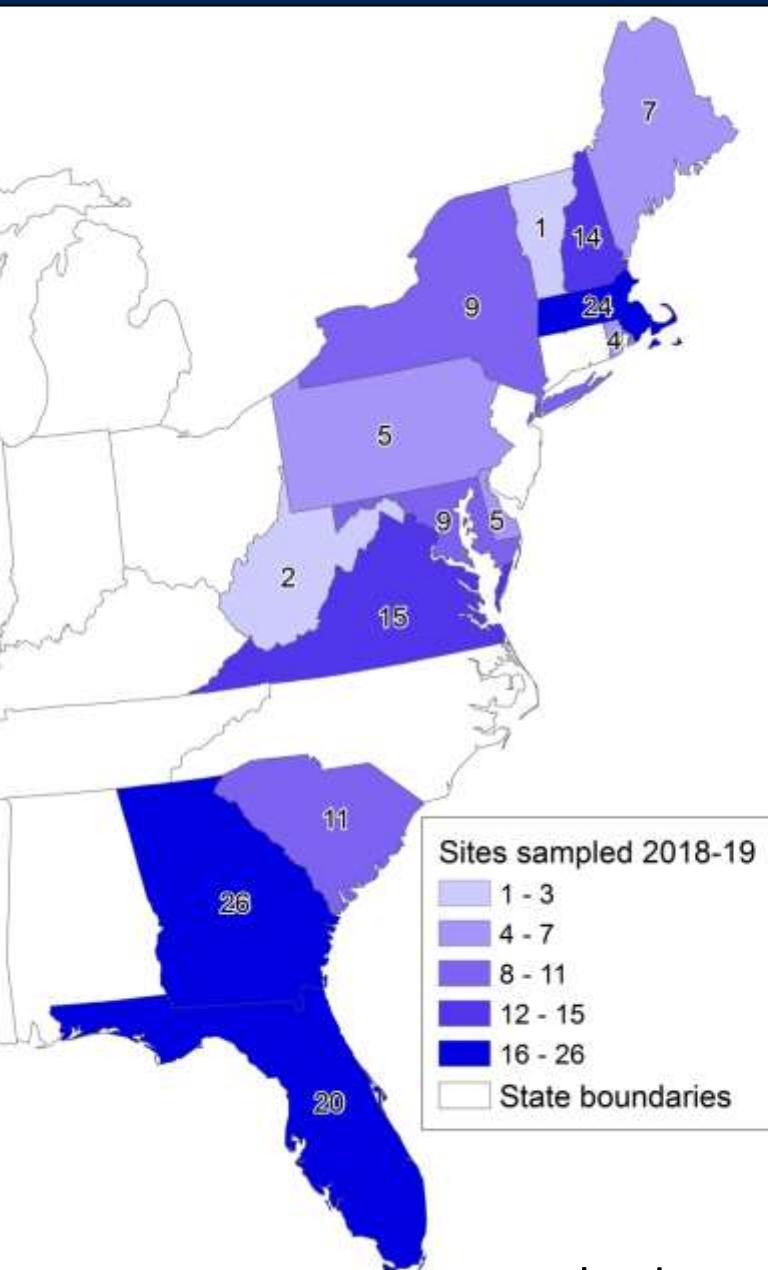
DA  
20 traps X 4 nights X 3 events (i.e., 12 nights total; 3 X TRAs) / site

### Analysis Methods

Abundance estimation using N-mixture models (Royle 2004)

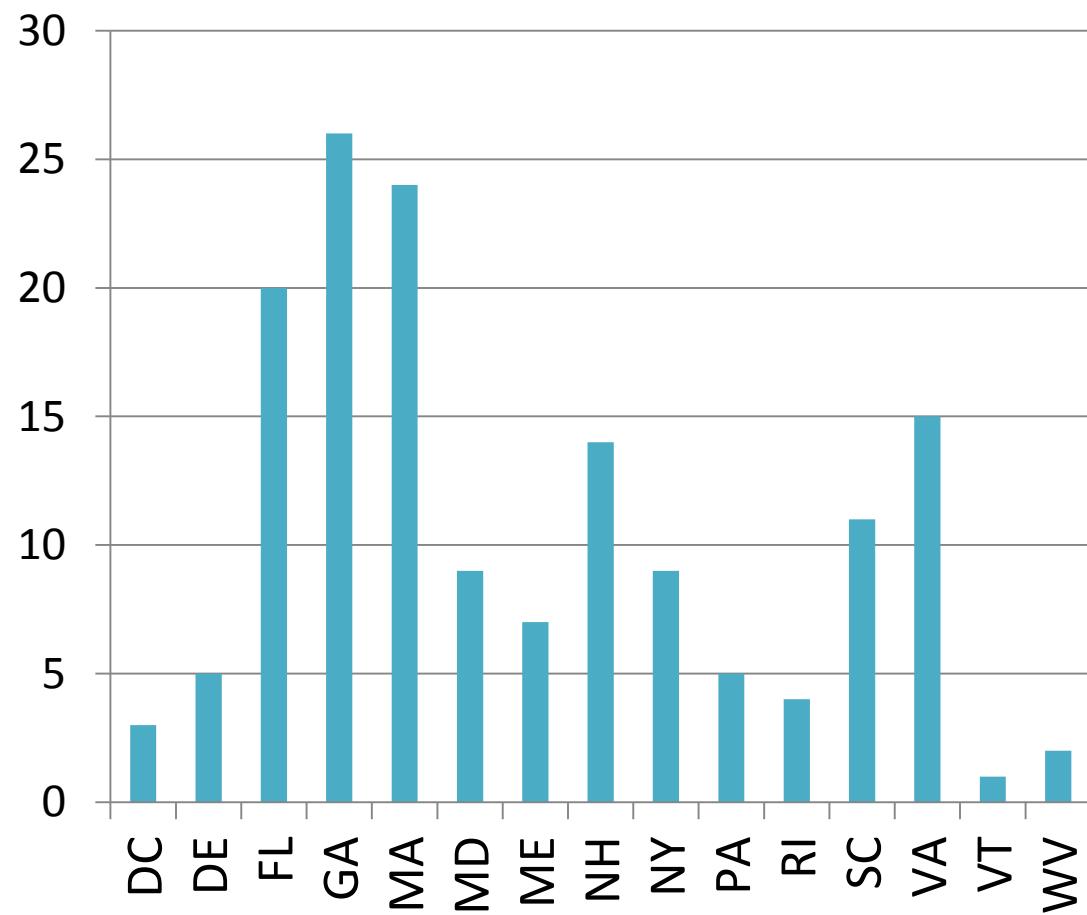
Density estimation using spatially explicit capture recapture (SECR)

# Region-wide Monitoring – DRAFT RESULTS

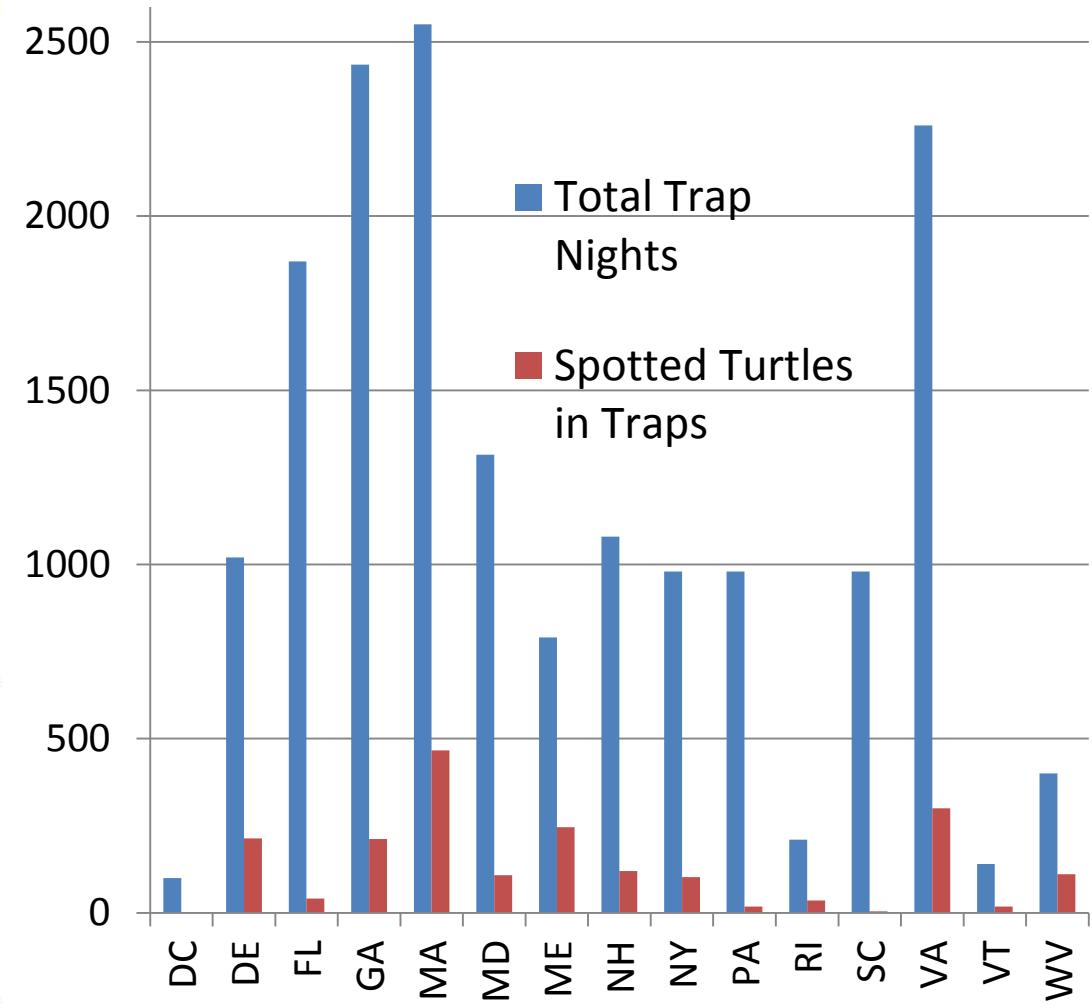
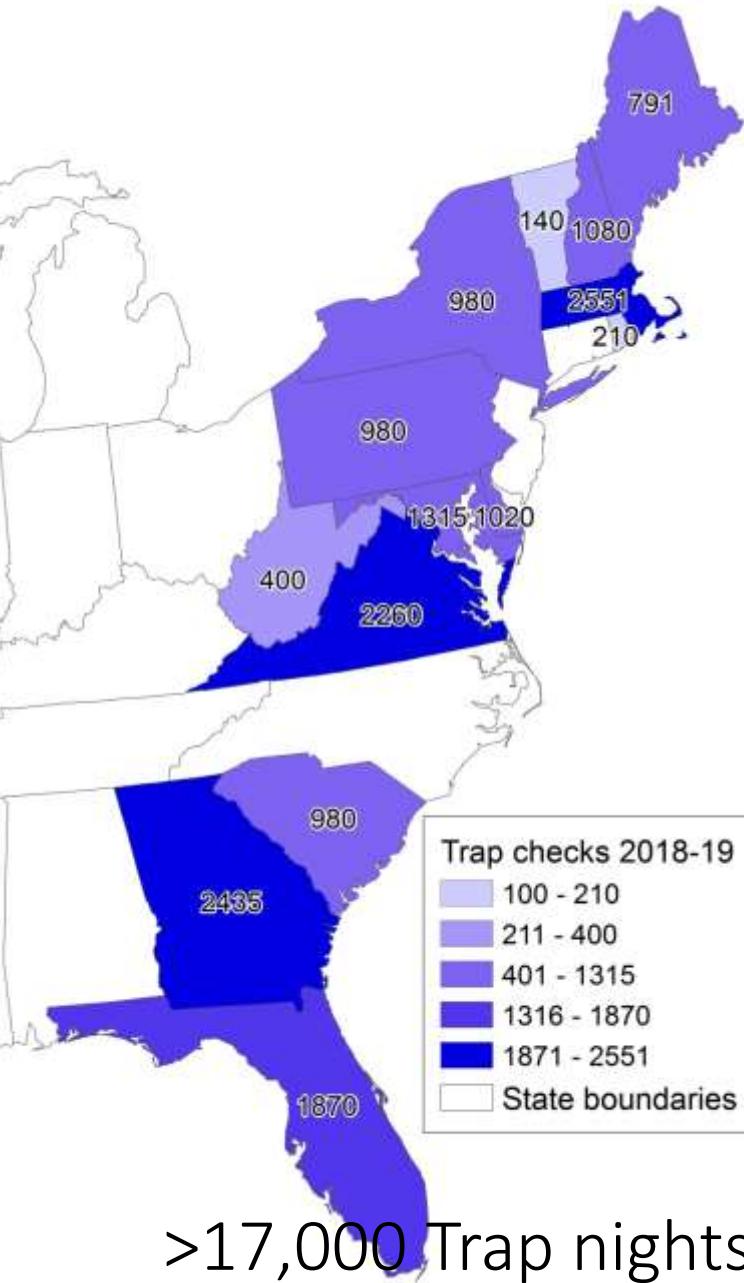


155 sites sampled across the region

Sites trapped, 2018-2019

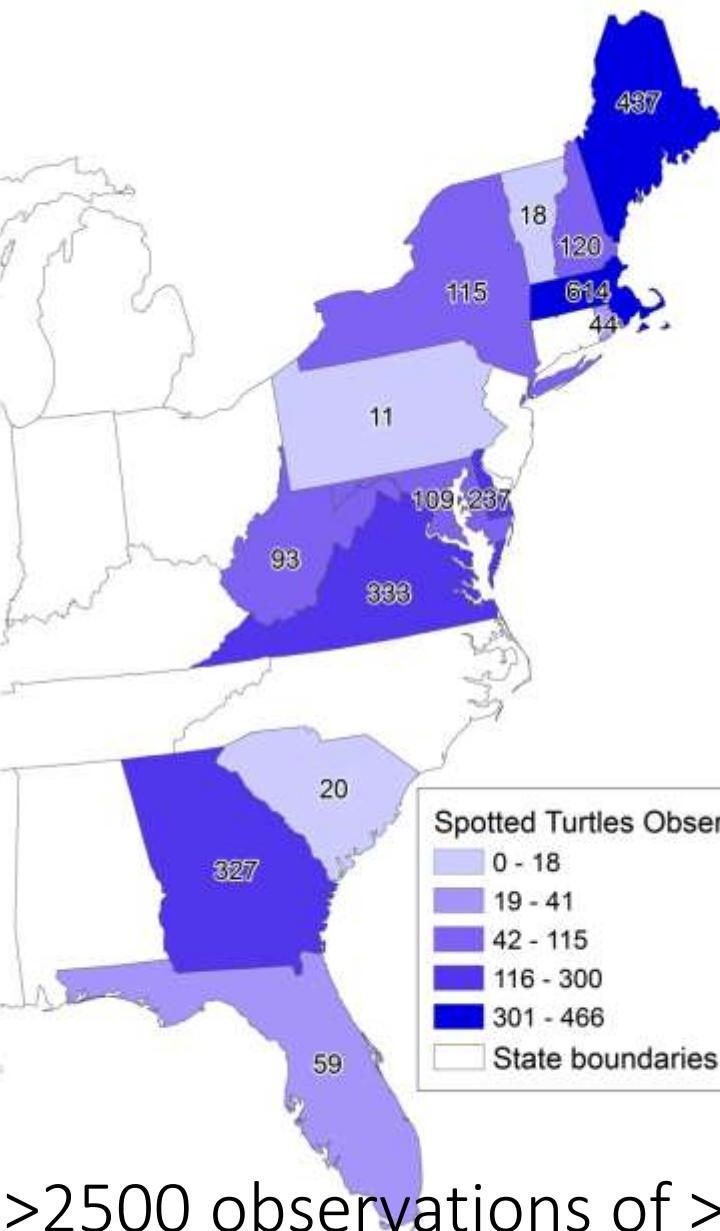


# Region-wide Monitoring - DRAFT RESULTS

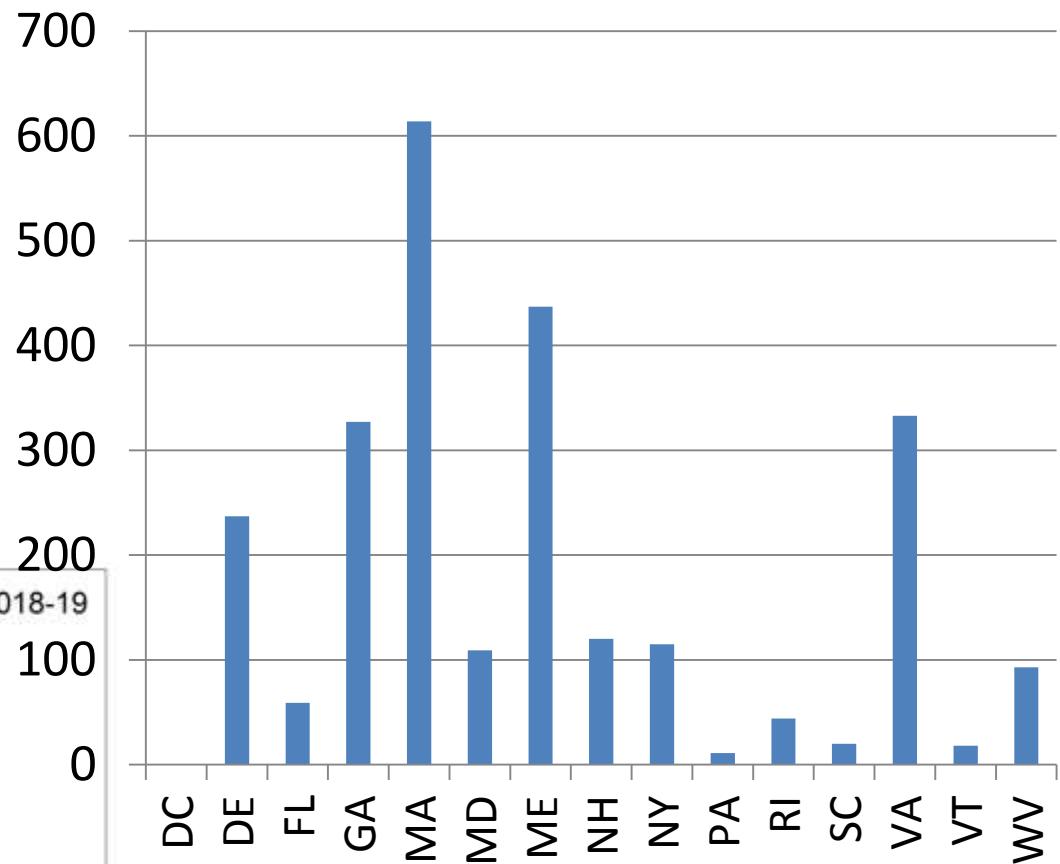


>17,000 Trap nights, ~2000 spotted turtles in traps

# Region-wide Monitoring - DRAFT RESULTS

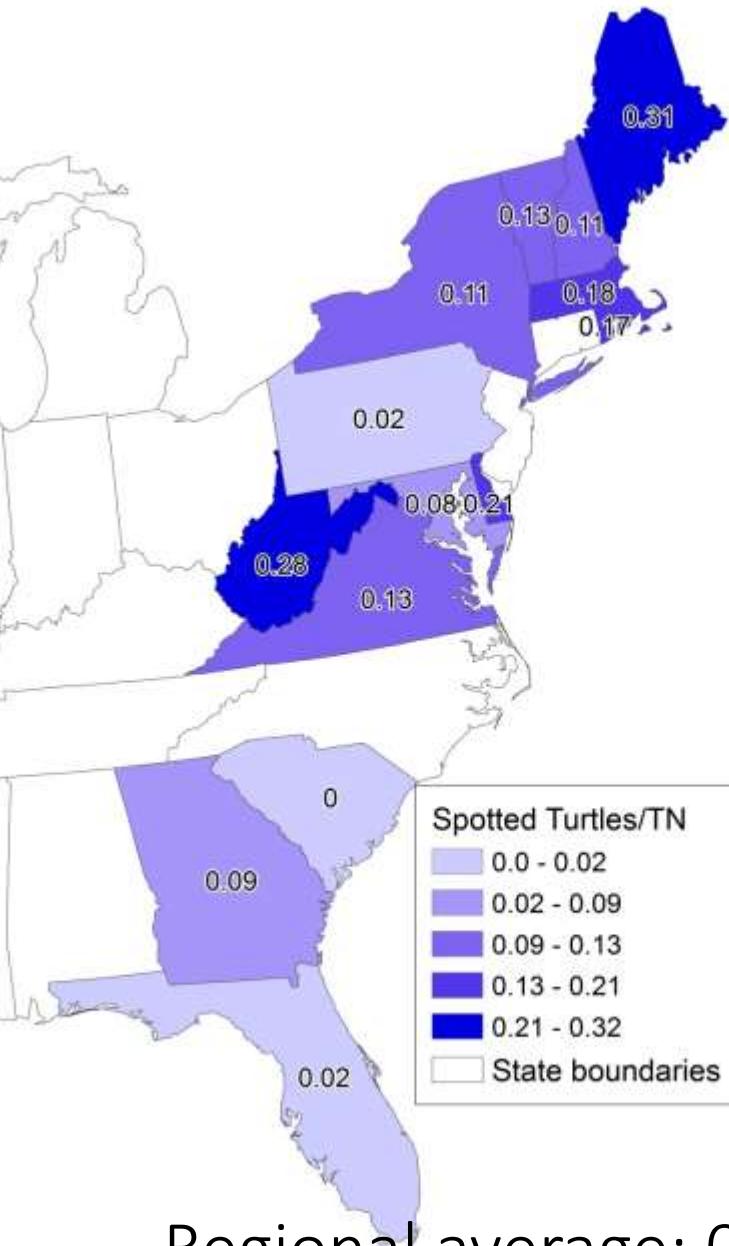


Total spotted turtle captures  
2018-2019

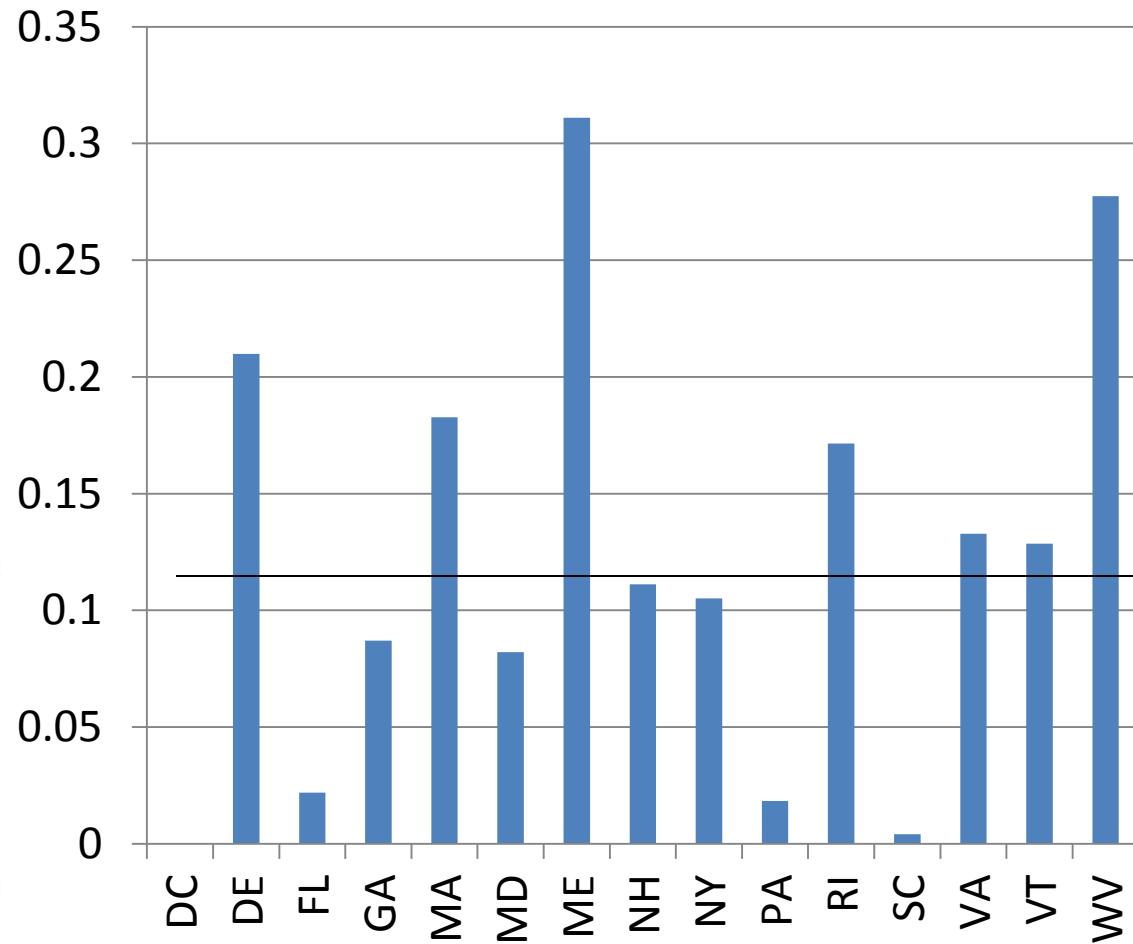


>2500 observations of >1500 spotted turtles across the region

# Region-wide Monitoring - DRAFT RESULTS

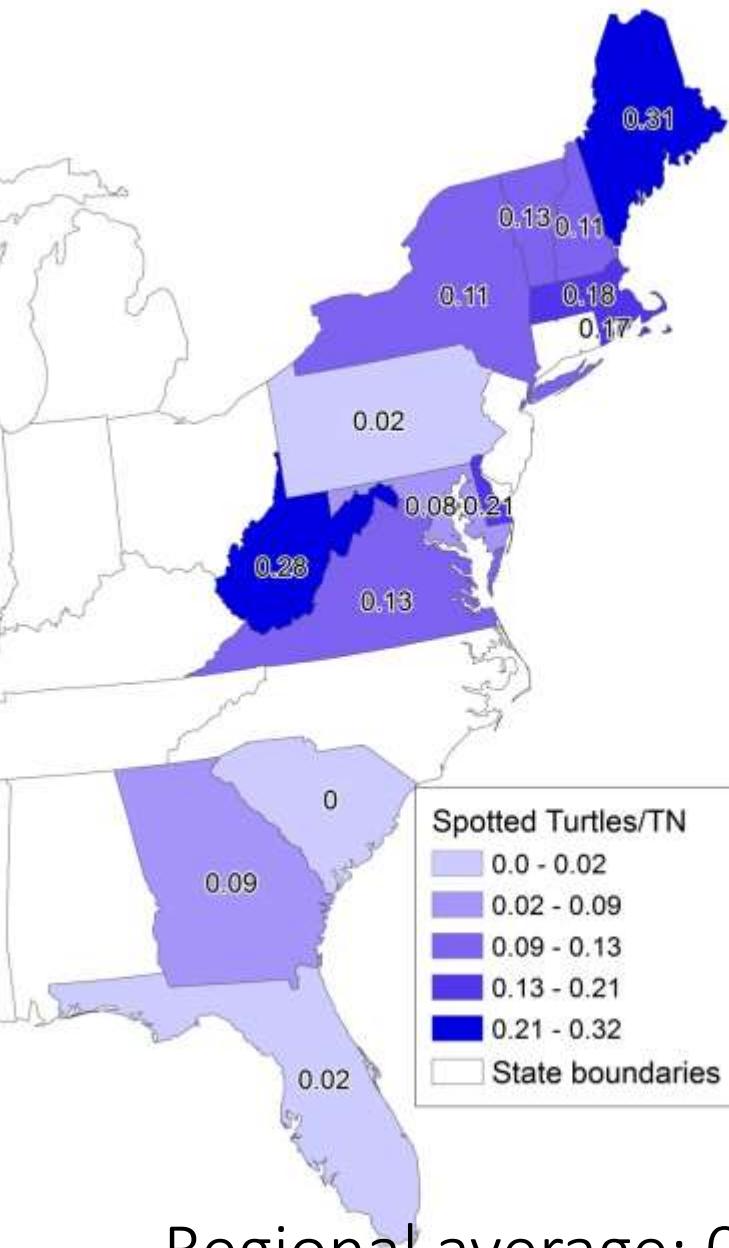


Spotted turtles / trap night

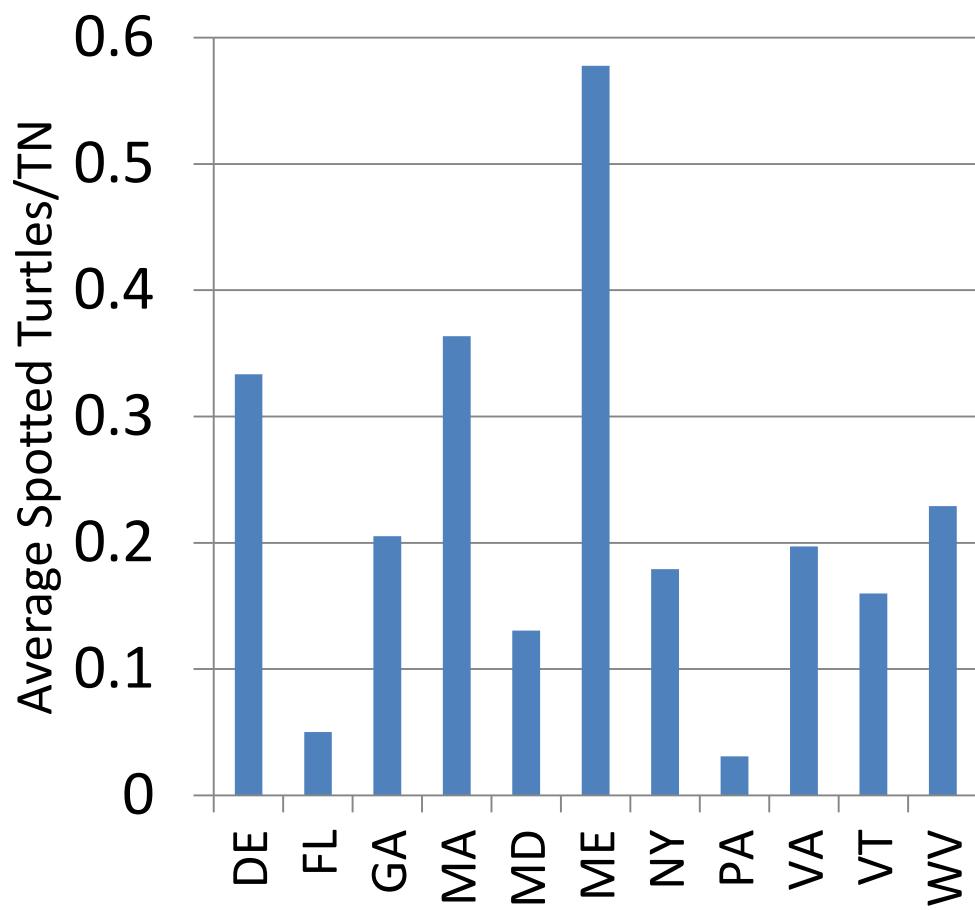


Regional average: 0.116 Spotted Turtles / TN

# Region-wide Monitoring - DRAFT RESULTS



Spotted turtles / trap night at 2 most successful DA sites/state

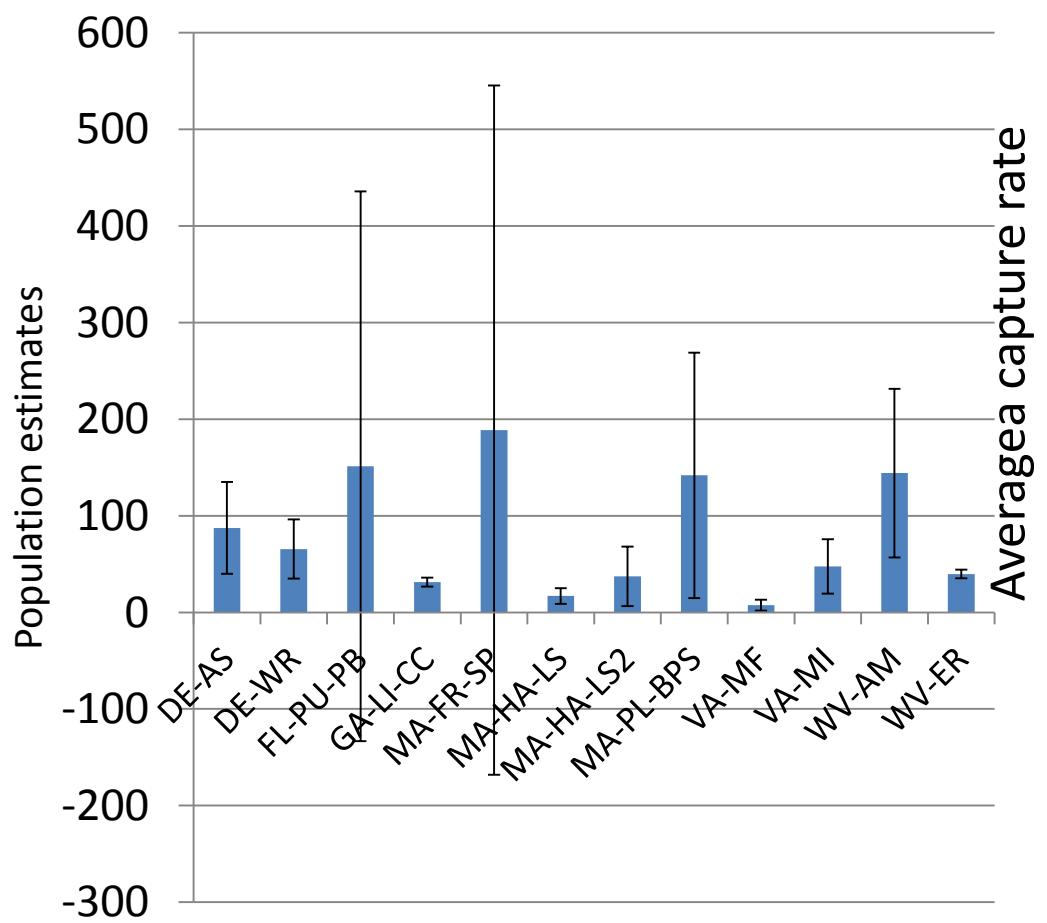


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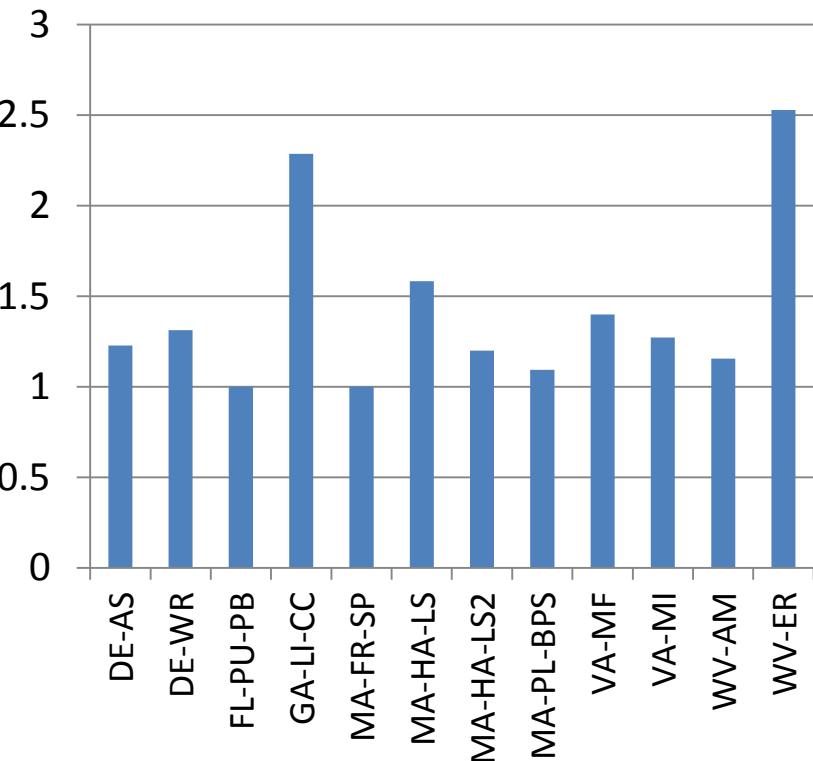
# Region-wide Monitoring - DRAFT RESULTS

## Region-wide population estimates, 2018

Population estimates

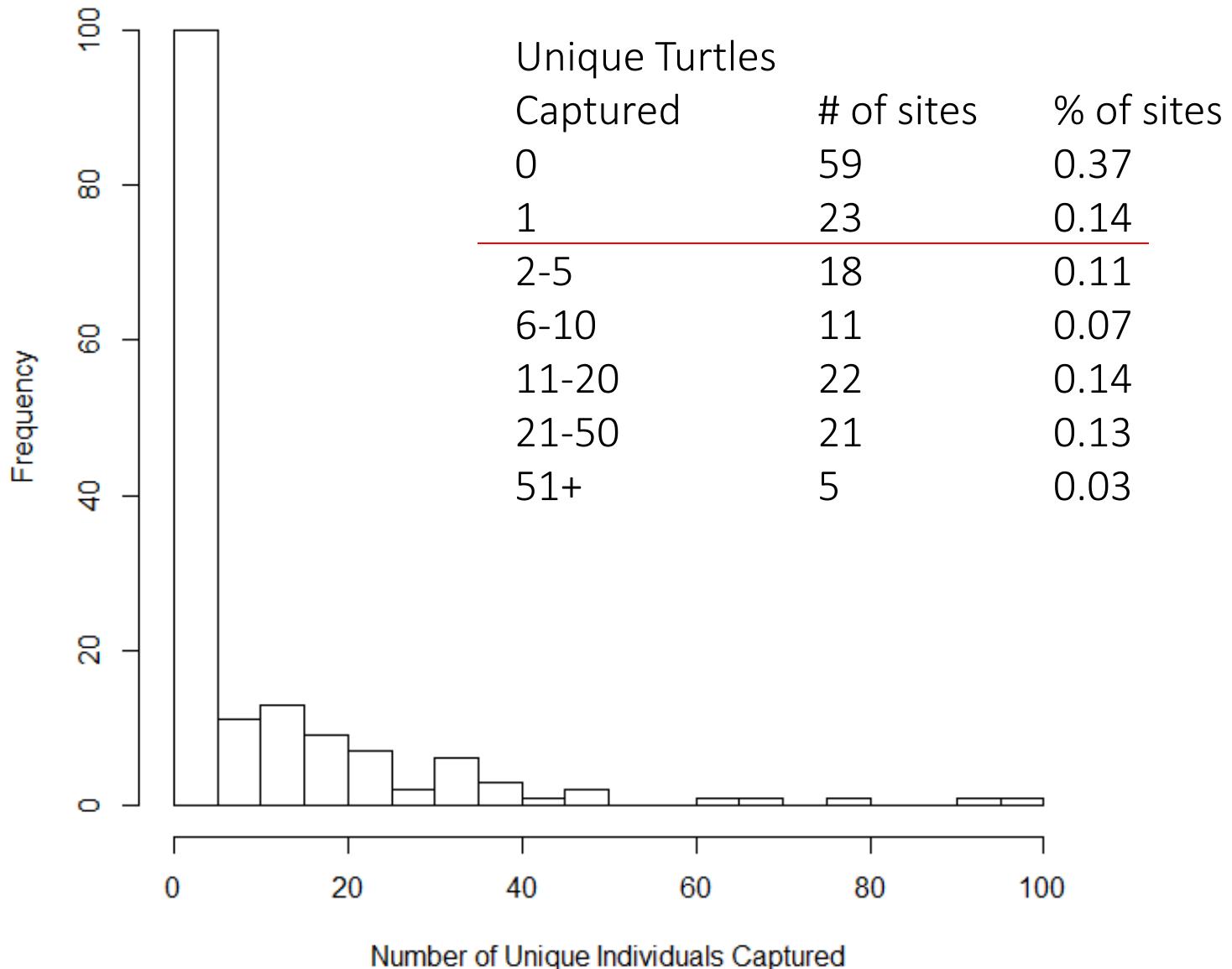


Average capture rate



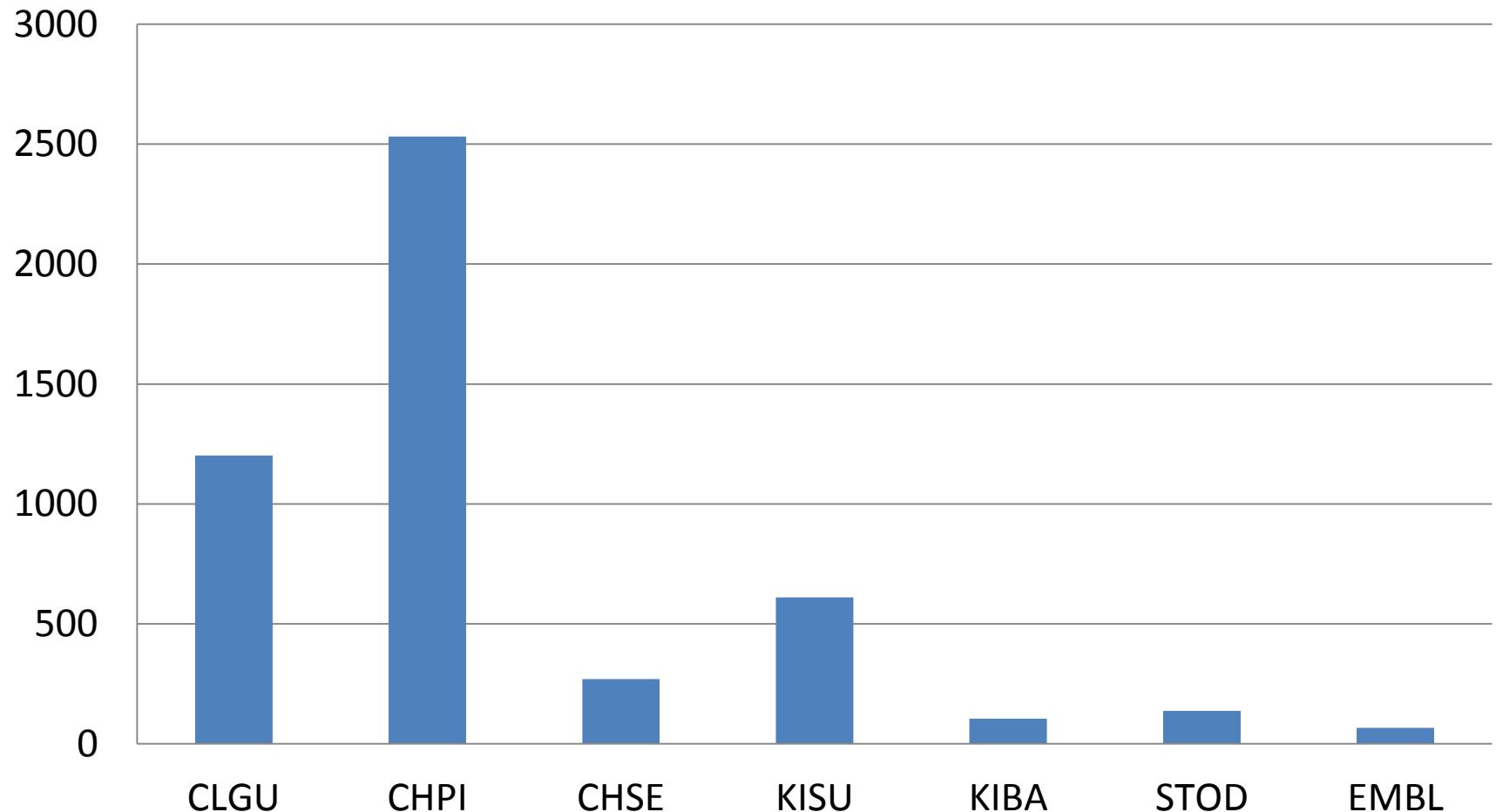
# Region-wide Monitoring- DRAFT RESULTS

## Minimum Observed Population Sizes



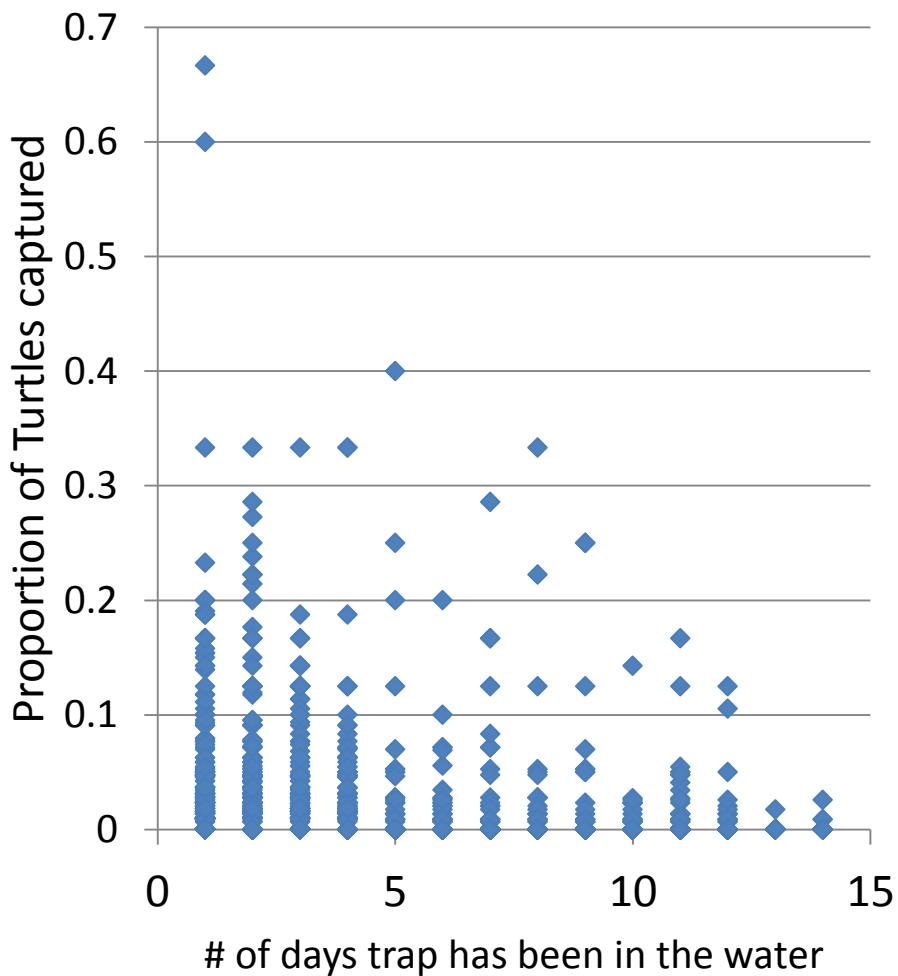
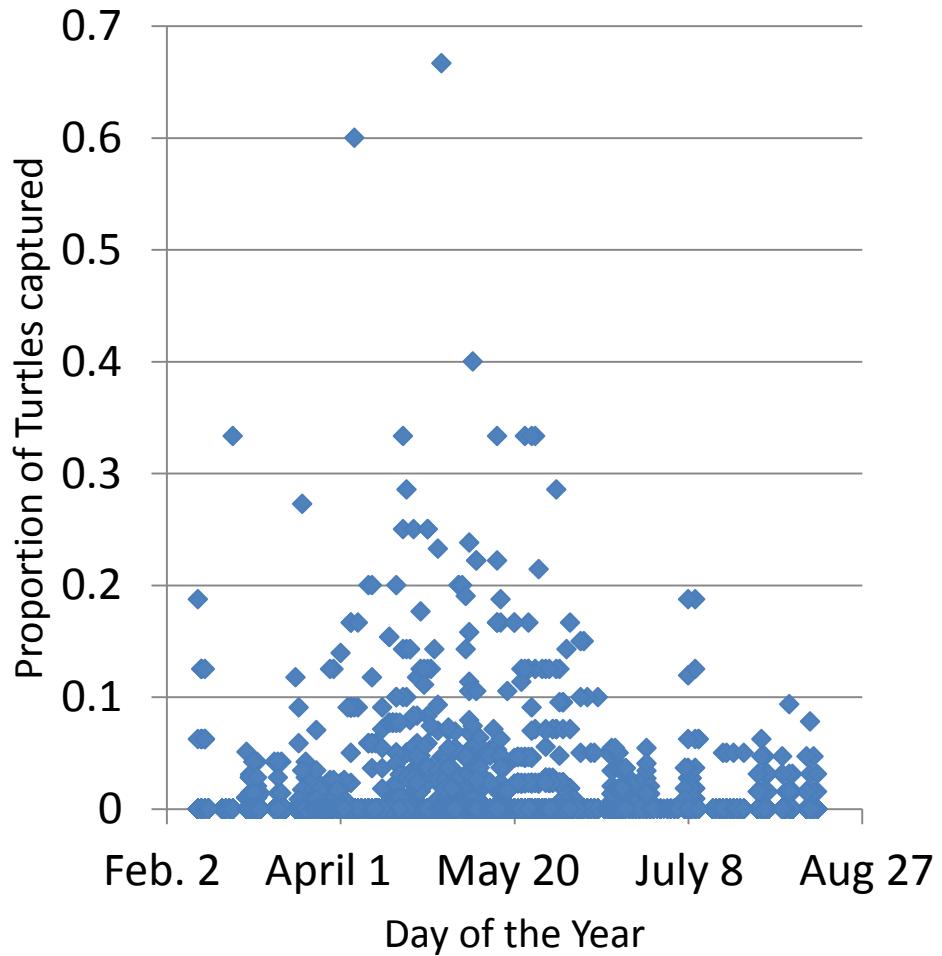
# Region-wide Monitoring- DRAFT RESULTS

## All Turtle Species Captured, 2019



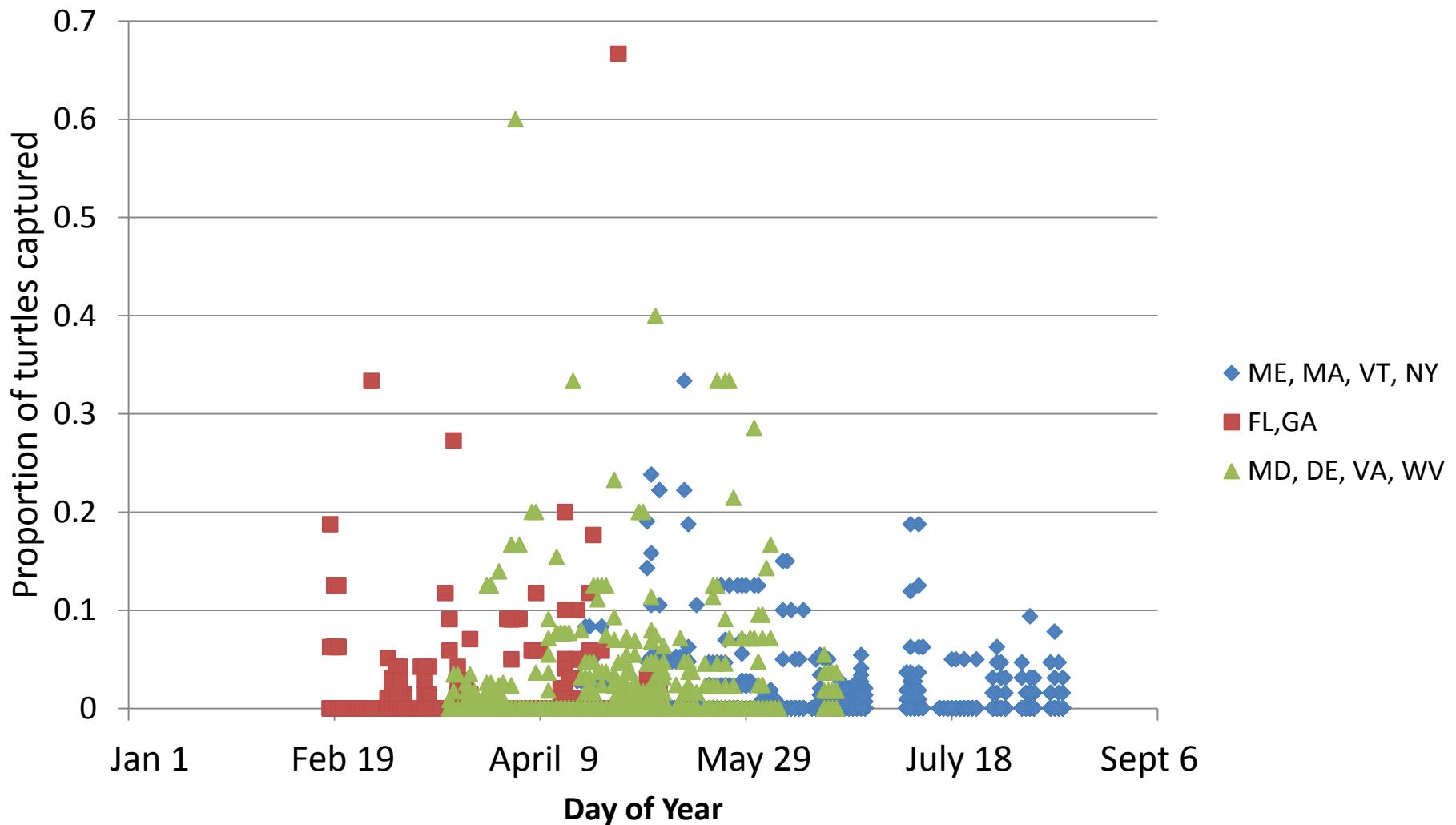
# Region-wide Monitoring- DRAFT RESULTS

## Trap success by season and days in the water



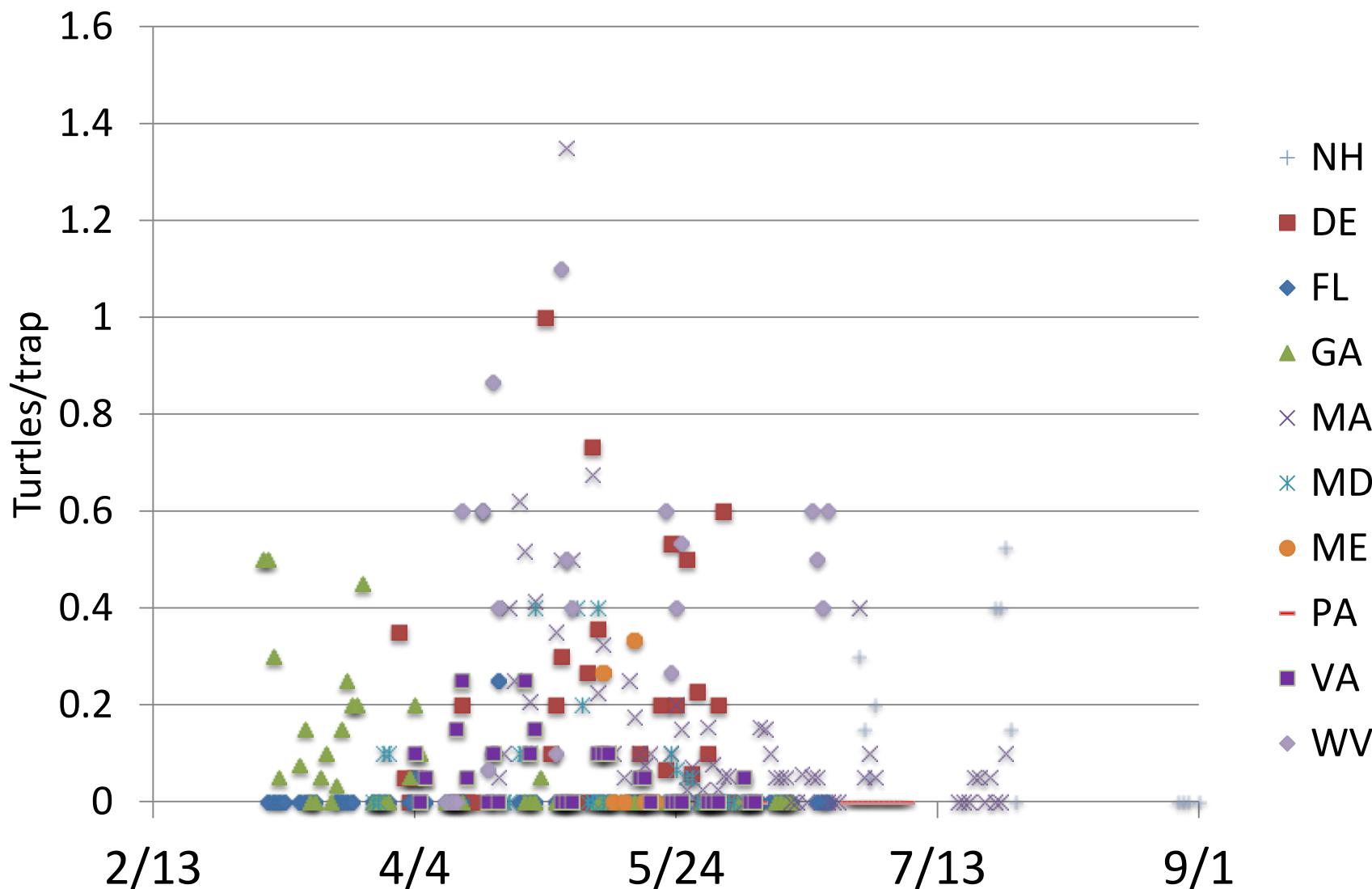
# Region-wide Monitoring- DRAFT RESULTS

## Seasonal trap success, by region



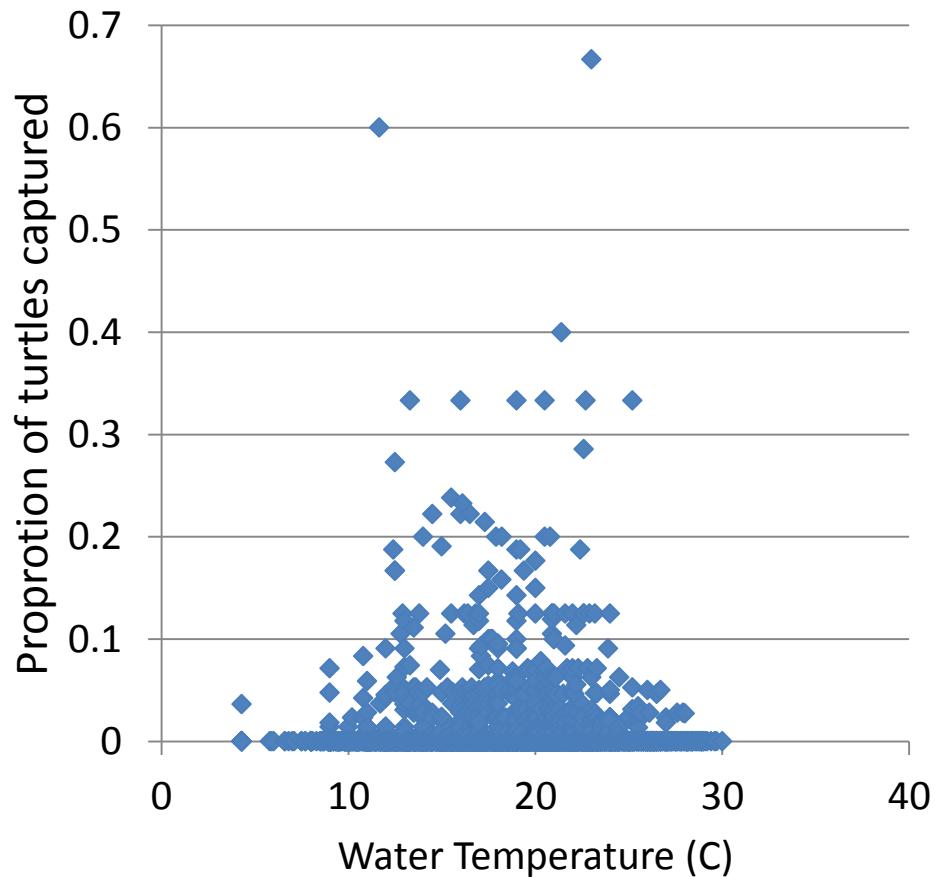
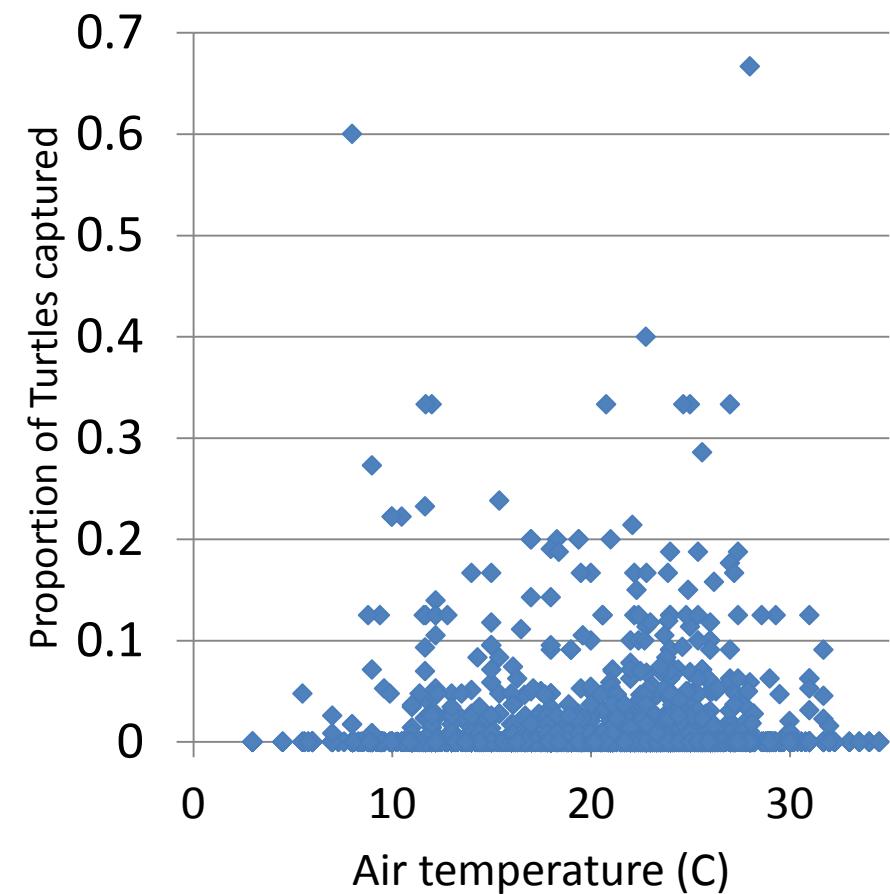
# Region-wide Monitoring- DRAFT RESULTS

# Spotted turtles/trap throughout the season, 2018



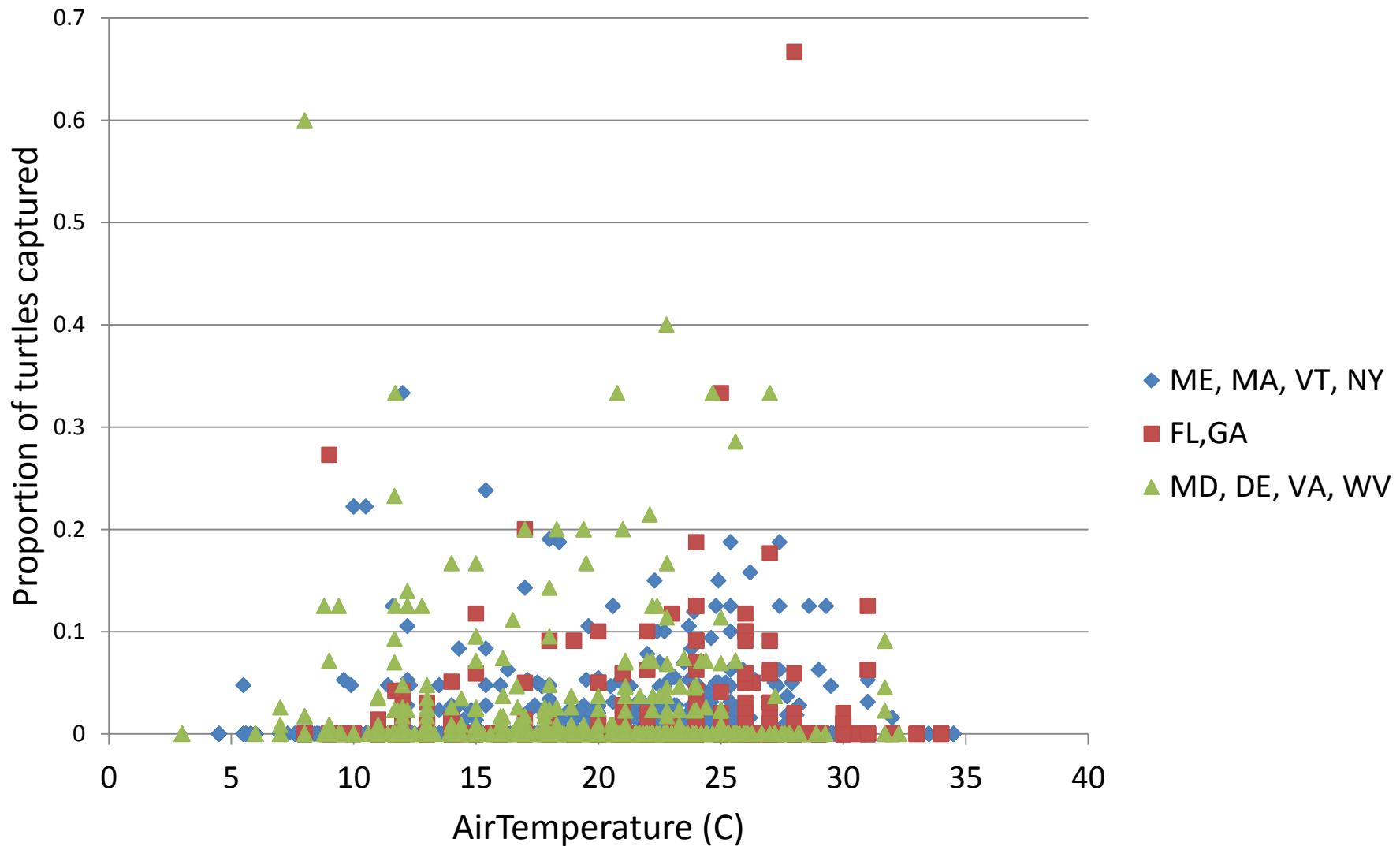
# Region-wide Monitoring- DRAFT RESULTS

## Trap success by temperature



# Region-wide Monitoring- DRAFT RESULTS

## Trap Success and Air Temperature, by Region



# Monitoring Conclusions

- Evidence of some relatively robust populations throughout the eastern US, but they may be relatively rare on the landscape
- Tracking effort and negative results are important
- Spatial and temporal variability (within and across sites) in:
  - Detection
  - Abundance
  - Demographics
- Flexibility and adaptation
- Local needs and goals

## Next steps

# Spotted Turtle Regional Planning Actions

Complete/underway

- Develop sampling protocol
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# Acknowledgments



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## NORTHEAST FRESHWATER TURTLE CONSERVATION PLANS



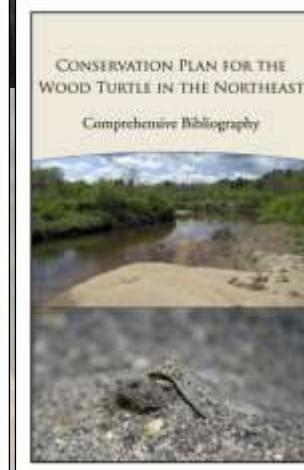
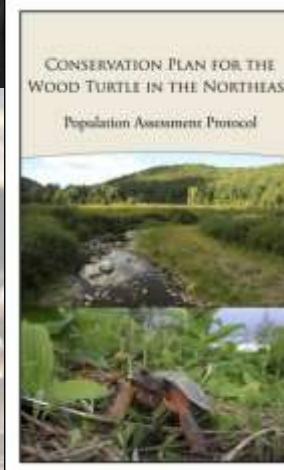
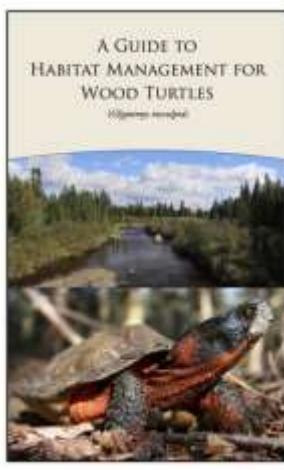
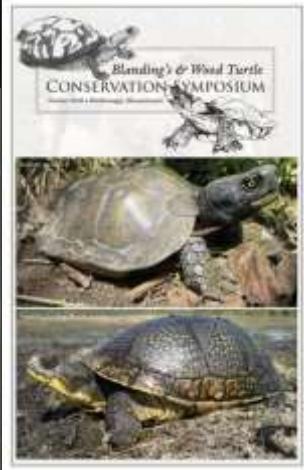
Blanding's Turtle



Spotted Turtle



Wood Turtle



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