

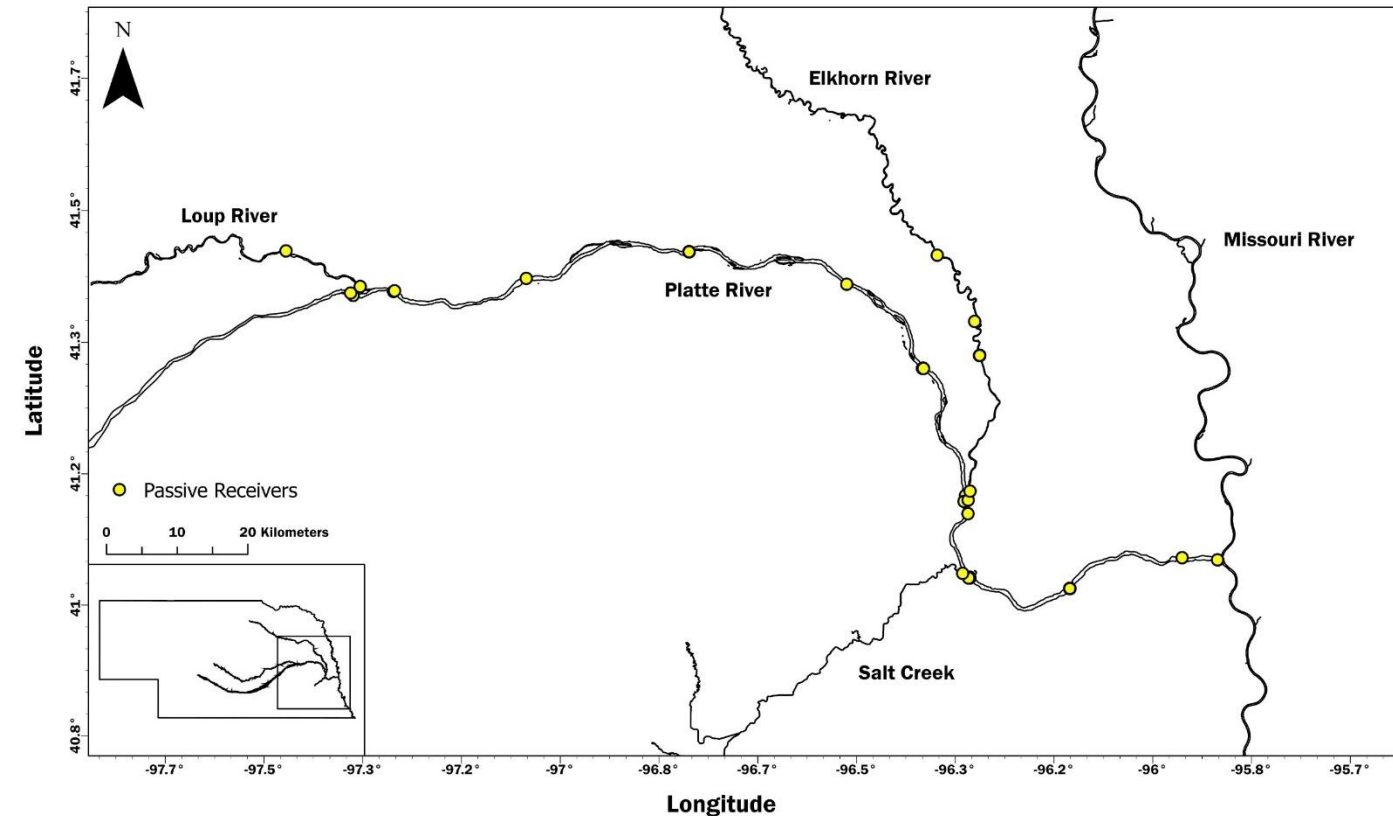
# February 2024 update





## Objective 1:

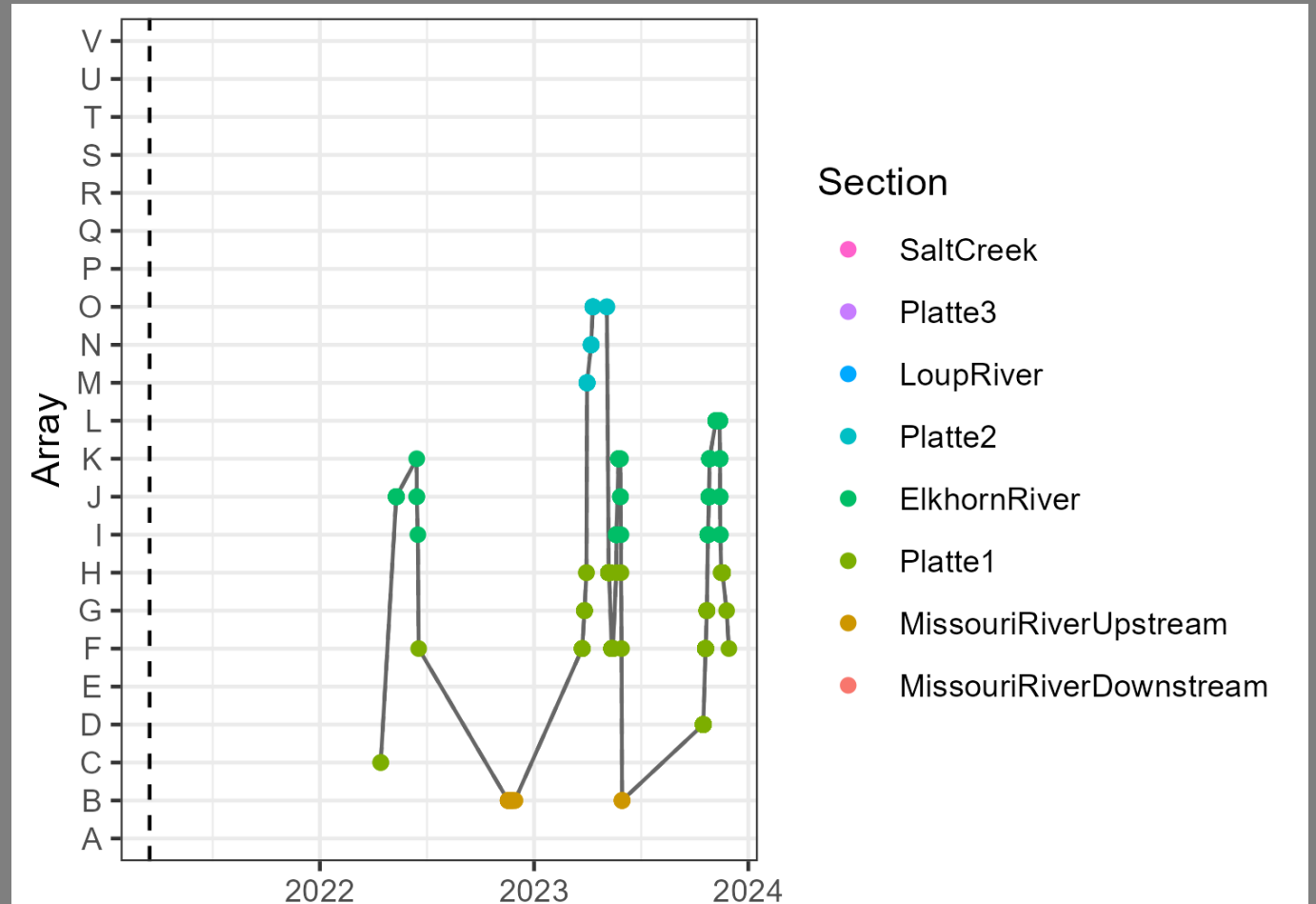
Identify relations among environmental conditions (i.e., river discharge and temperature) with the timing and extent of Pallid Sturgeon movement into and within the lower Platte River.



# Summary

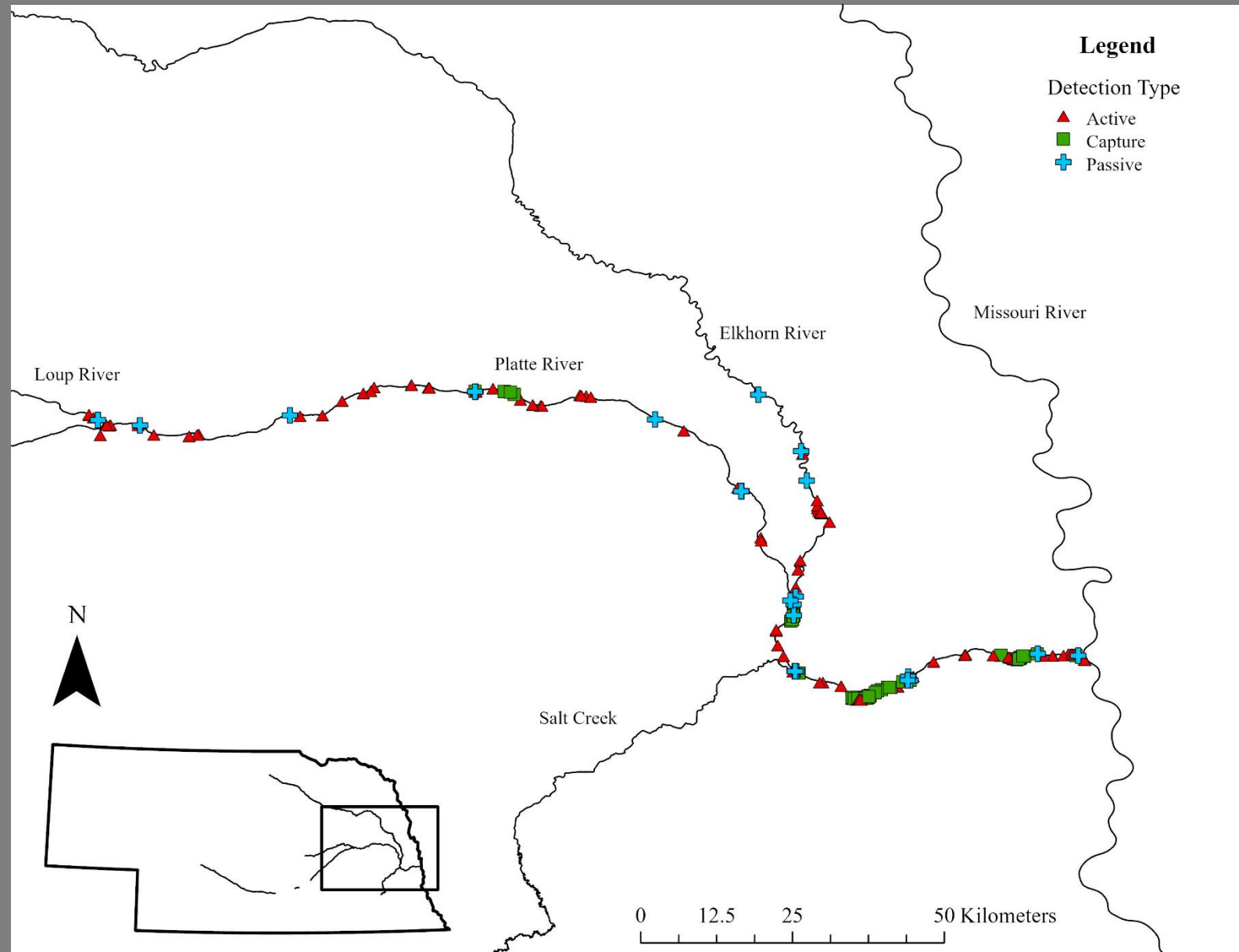
passive tracking

- 362,000+ total detections
  - 81 Pallid Sturgeon (9700 detections)
  - 11 Silver Carp
  - 1 Blue Sucker
- 93 unique transmitters
  - Nebraska Game and Parks Commission
  - University of Nebraska – Lincoln
  - US Fish & Wildlife Service
  - US Geological Survey
  - Missouri Department of Conservation
  - US Army Corps of Engineers
  - University of South Dakota
  - Iowa State University



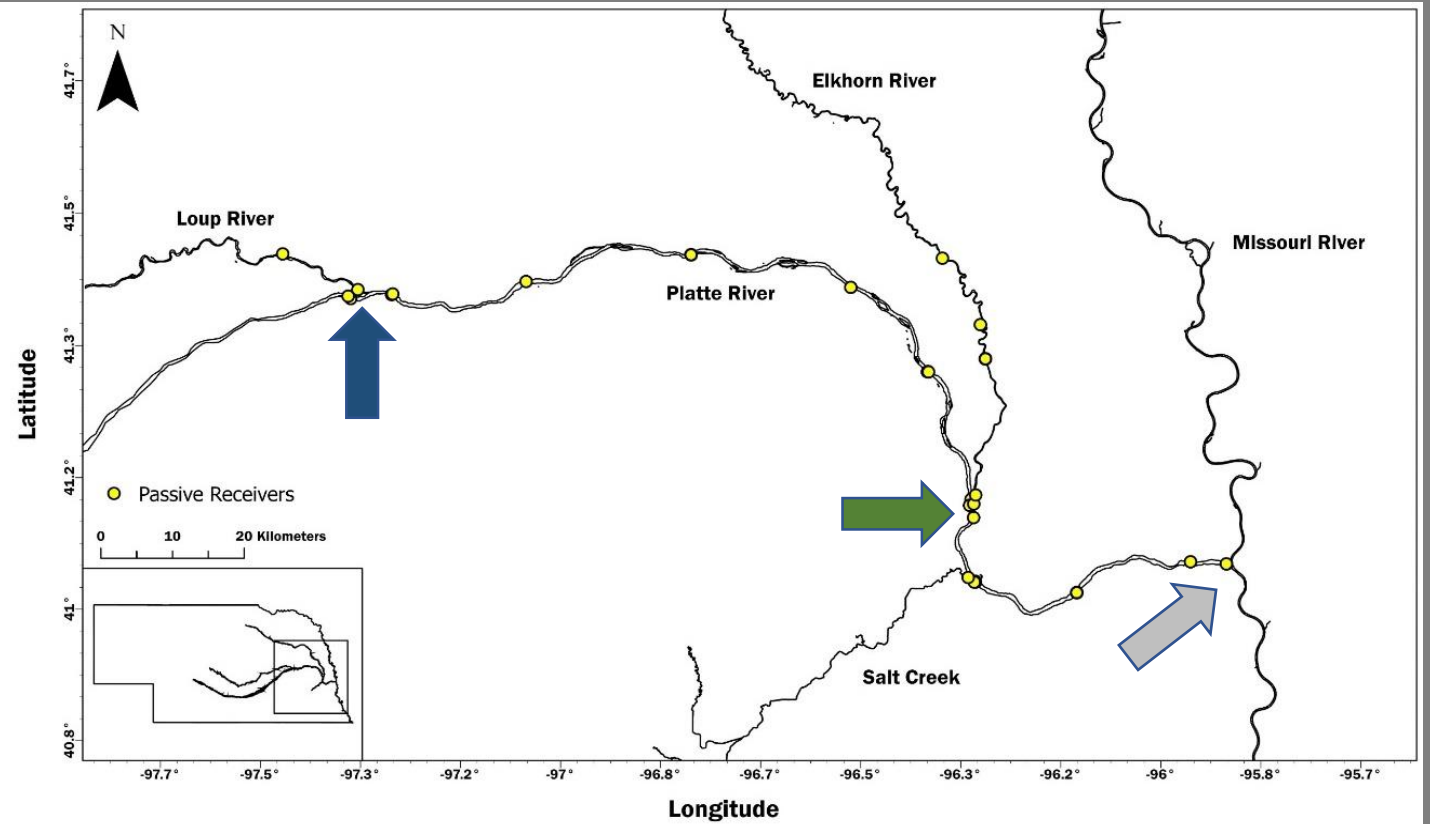
# Summary (Pallid Sturgeon only)

- Passive
  - 81 individuals
  - 44 only by passive
- Active
  - 43 individuals
  - 6 only by active
- Detected by both
  - 37 individuals

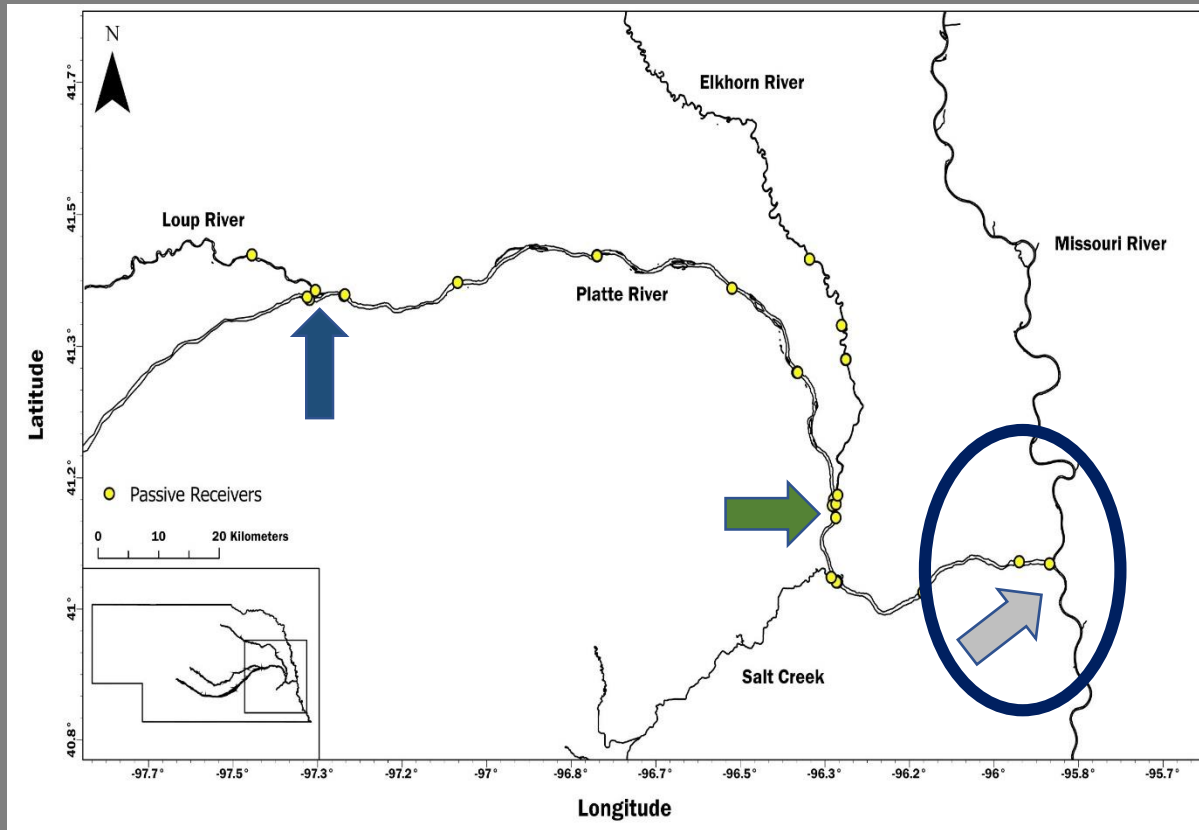


# Transitions

River	Year	Transmitters
Platte Segment 1	2022	49
	2023	66
Platte Segment 2	2022	9
	2023	15
Elkhorn	2022	10
	2023	15
Loup	2022	0
	2023	2



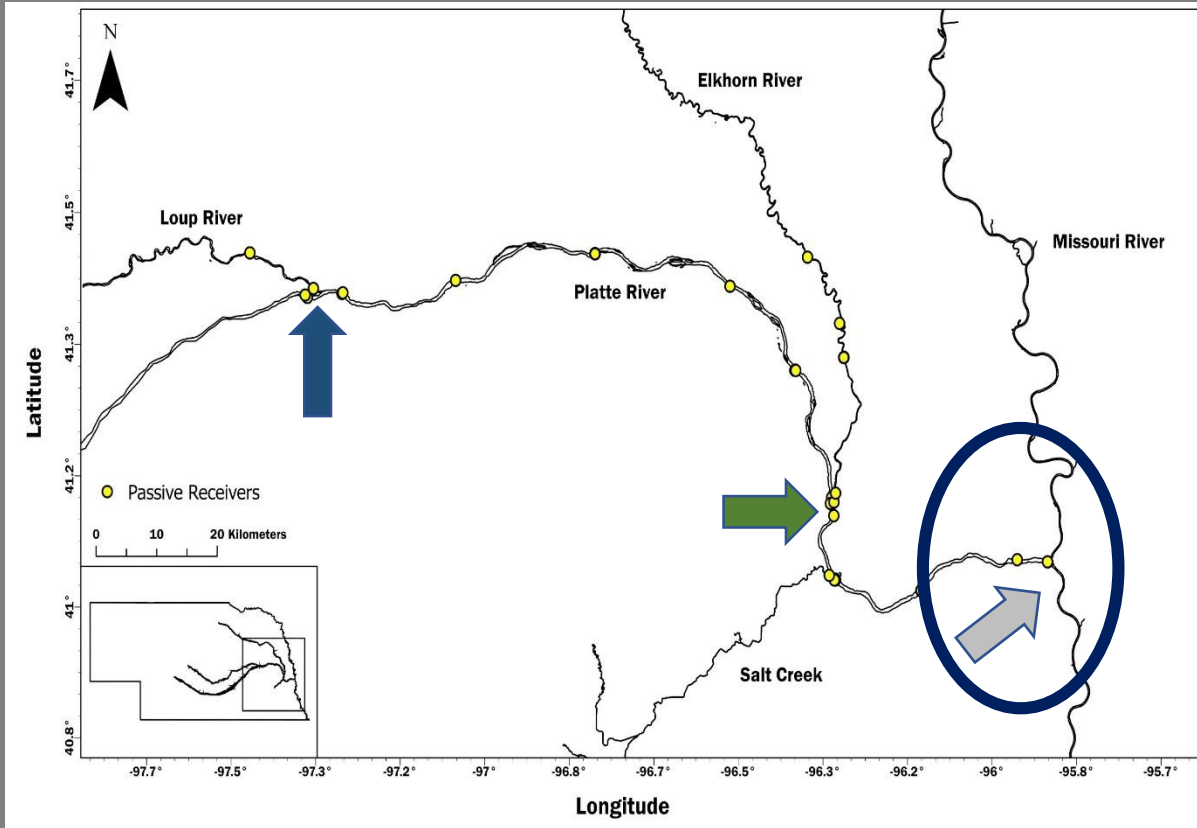
# Transitions



- Missouri – Platte (starting point)
  - PRRIP funded data
    - 2022-2023
    - 2100 detections (lower 2 receivers)
- Missouri River collaboration data
  - 2020-2023
  - 2500+ detections

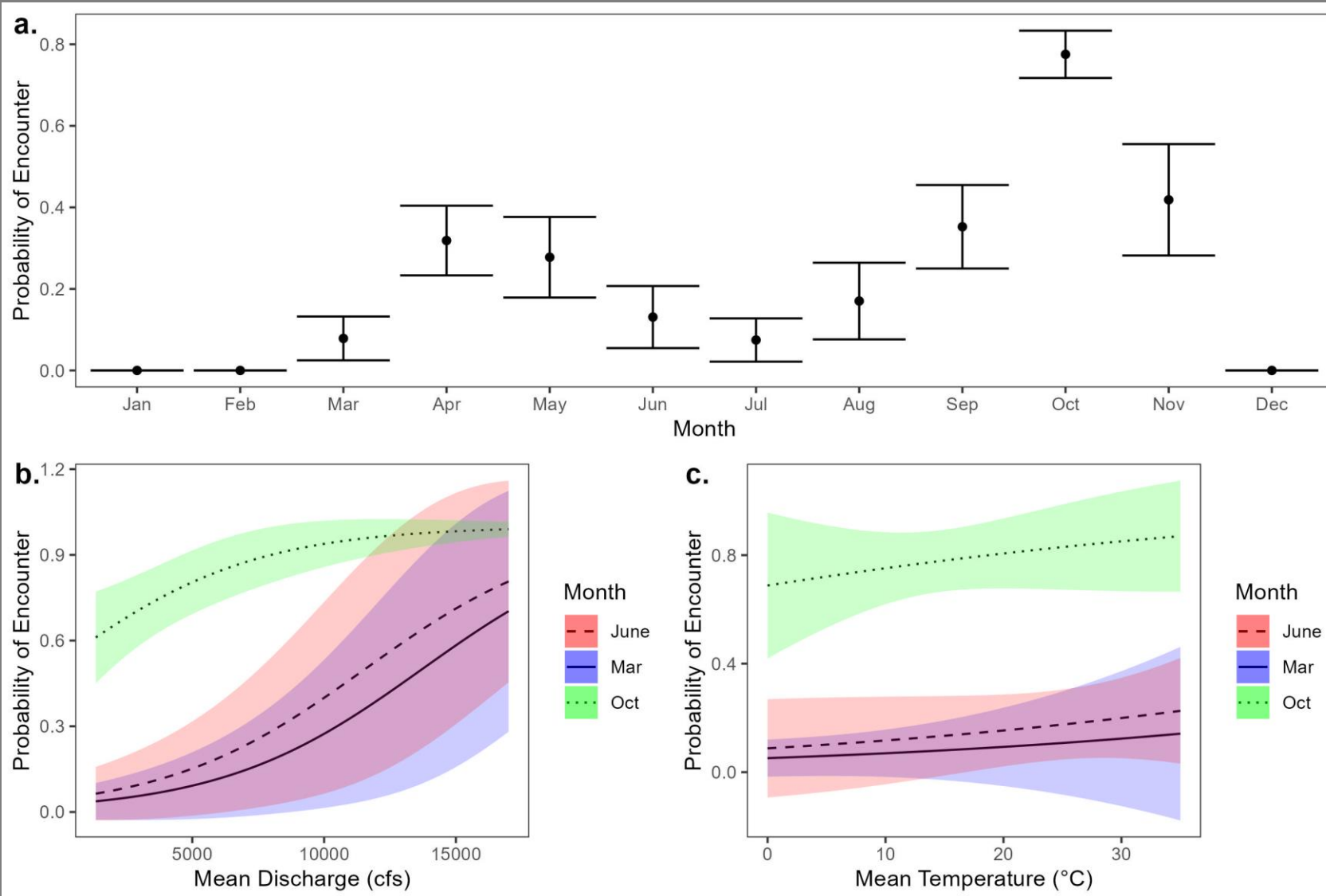


# Transitions



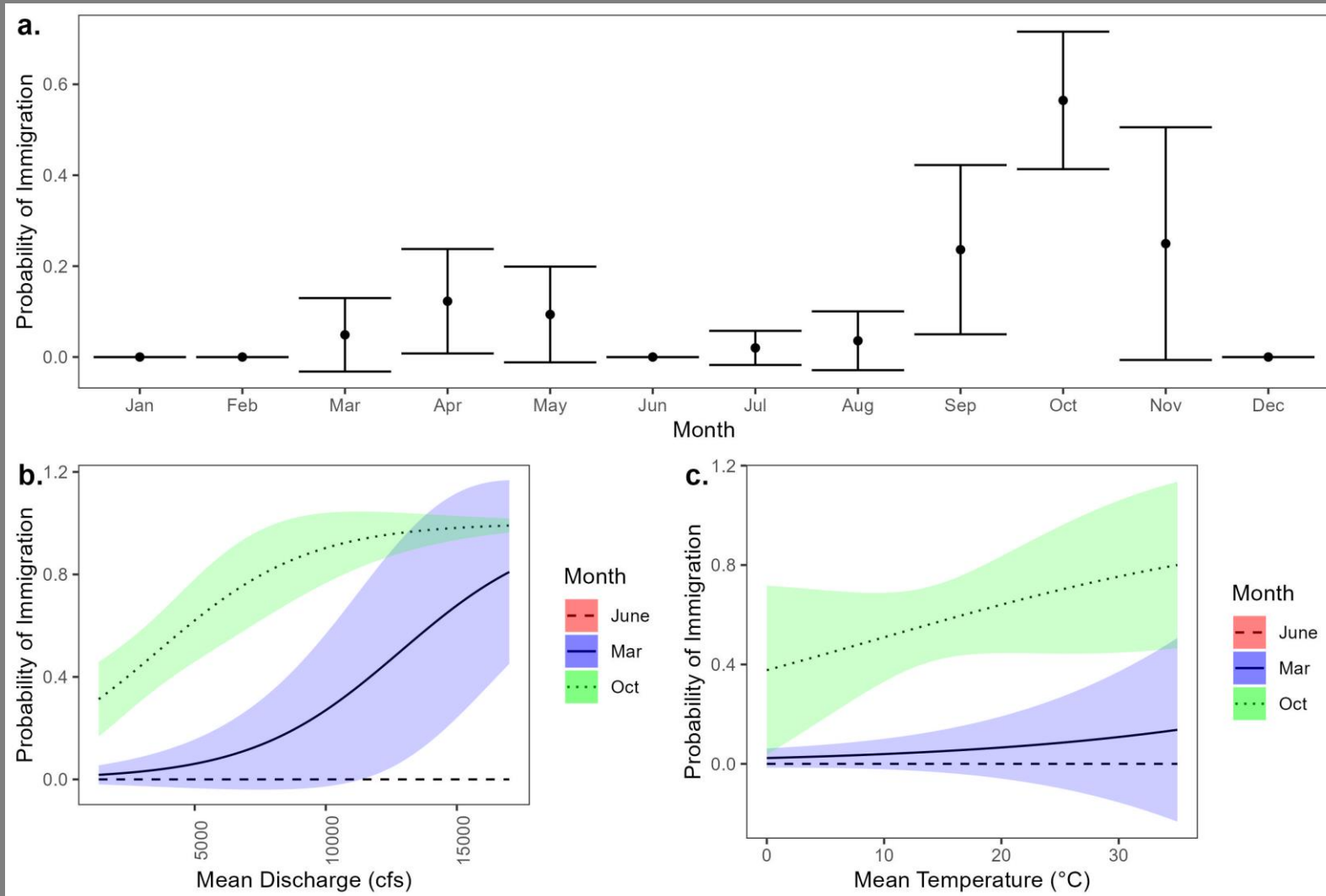
- Missouri – Platte (starting point)
  - PRRIP funded data
    - 2022-2023
    - 2100 detections (lower 2 receivers)
  - Missouri River collaboration data
    - 2020-2023
    - 2500+ detections
- Movement
  - Encounter, immigration, emigration
    - Logistic regression (env. vars)
    - Multistate models (transition  $p$ )
      - Work in progress

# Probability of Encounter



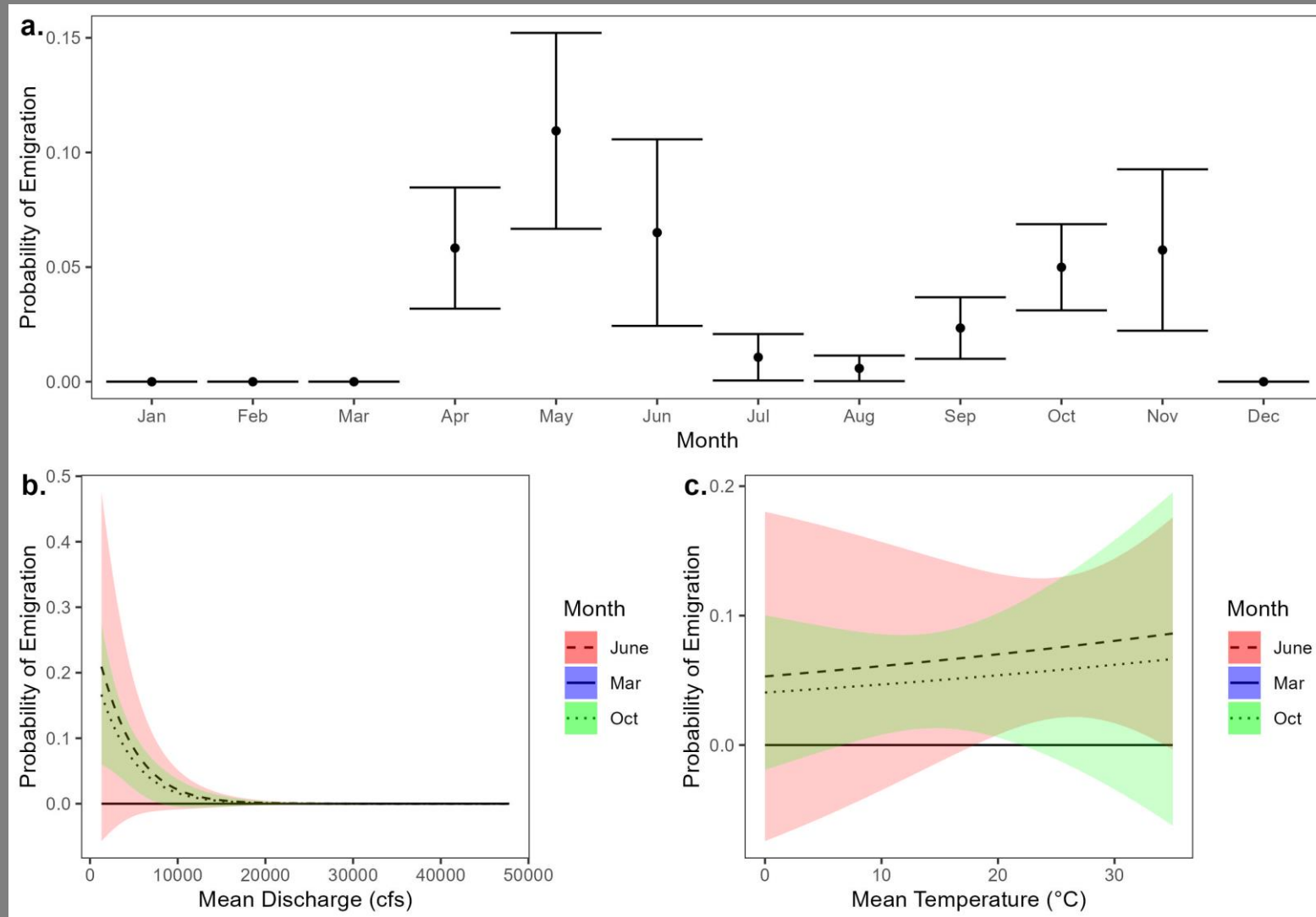


# Probability of Immigration

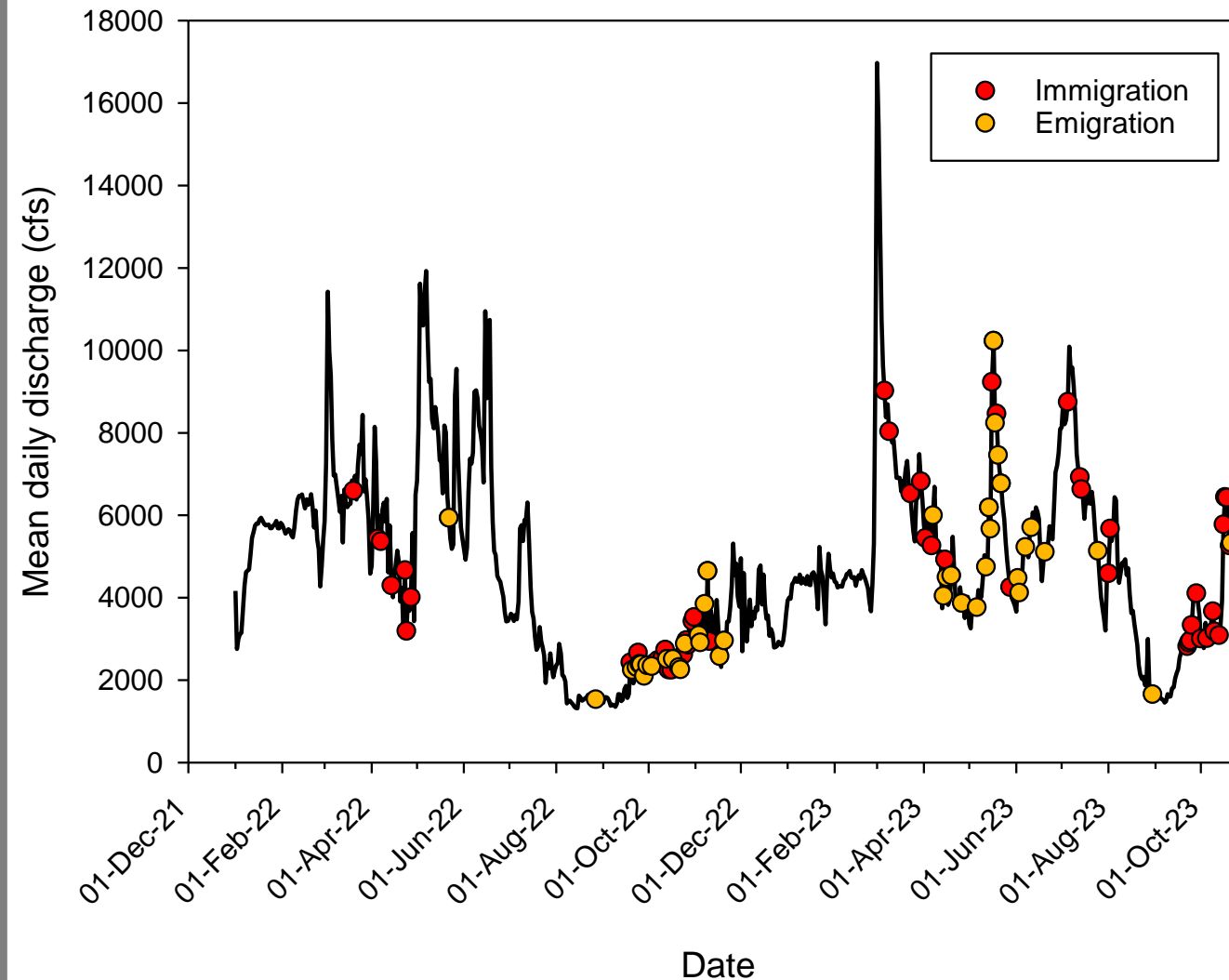


# Probability of Emigration\*

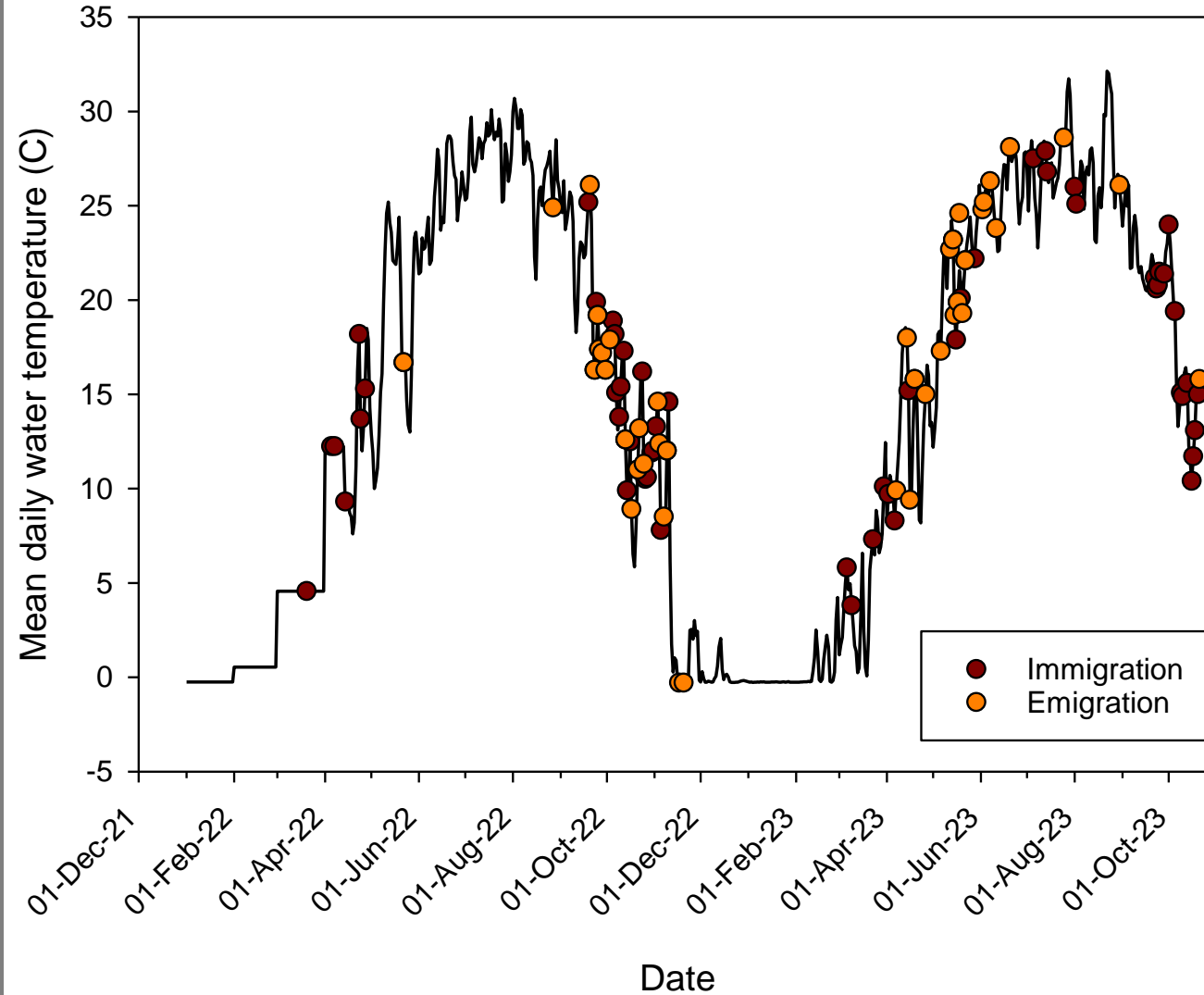
\*All data available were used in this example



# Immigration and Emigration

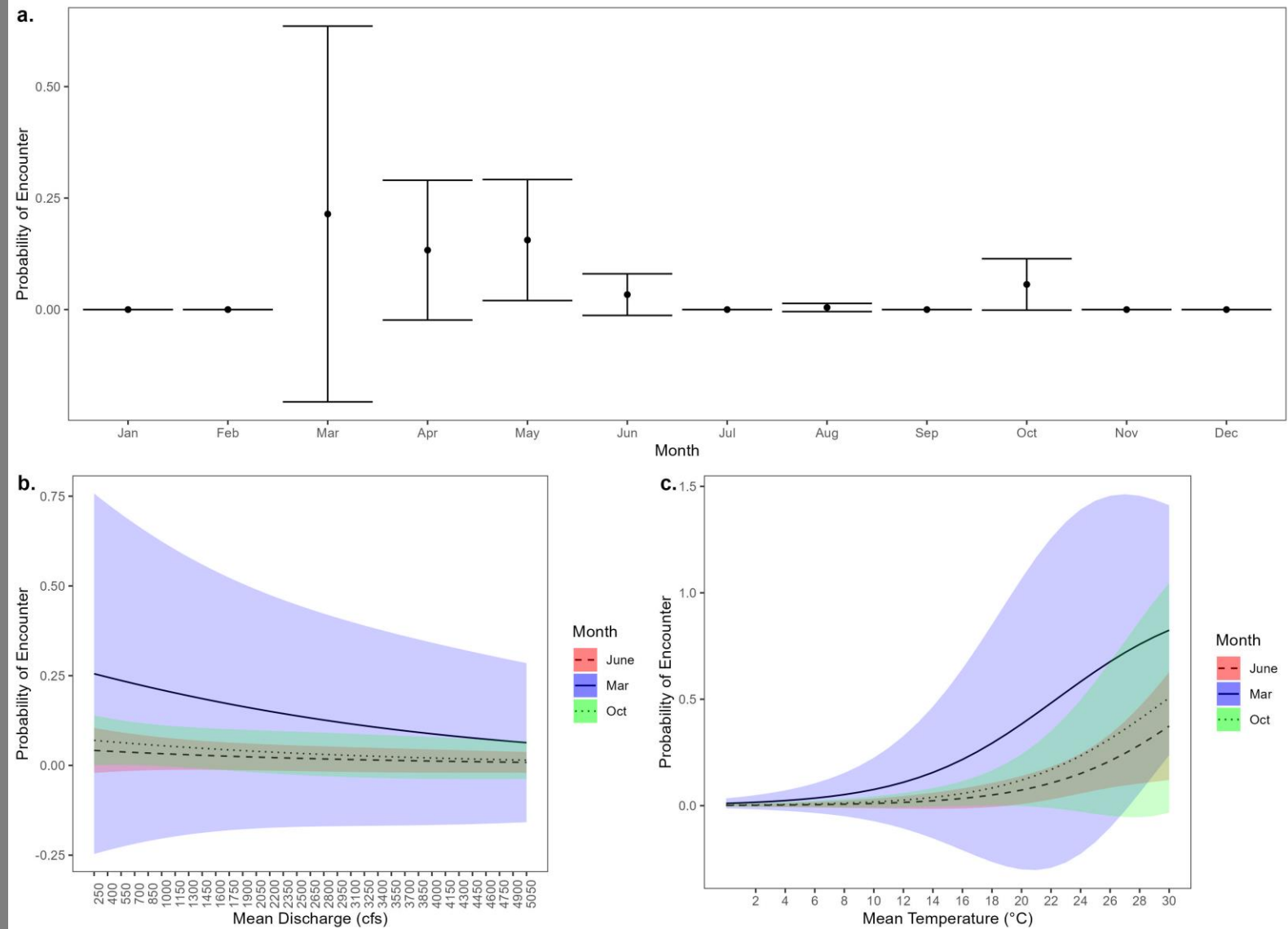
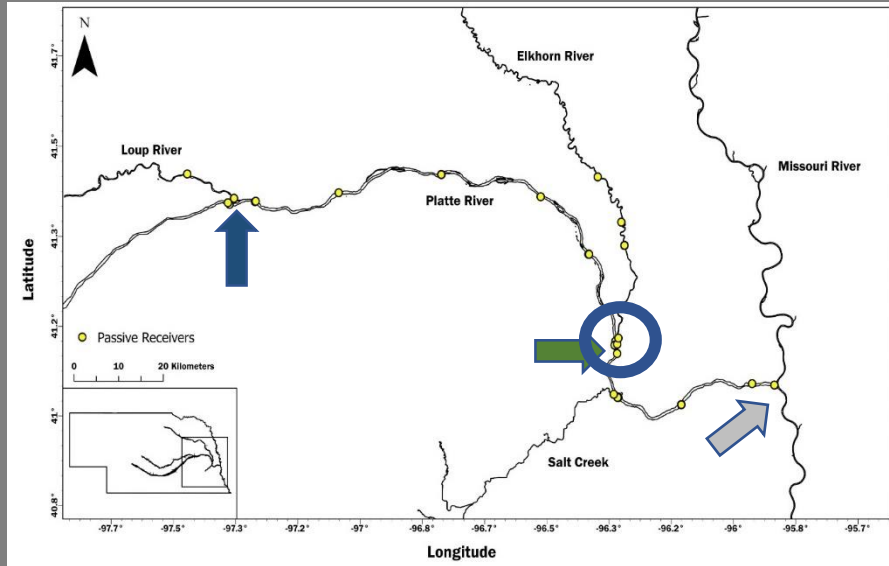


# Immigration and Emigration

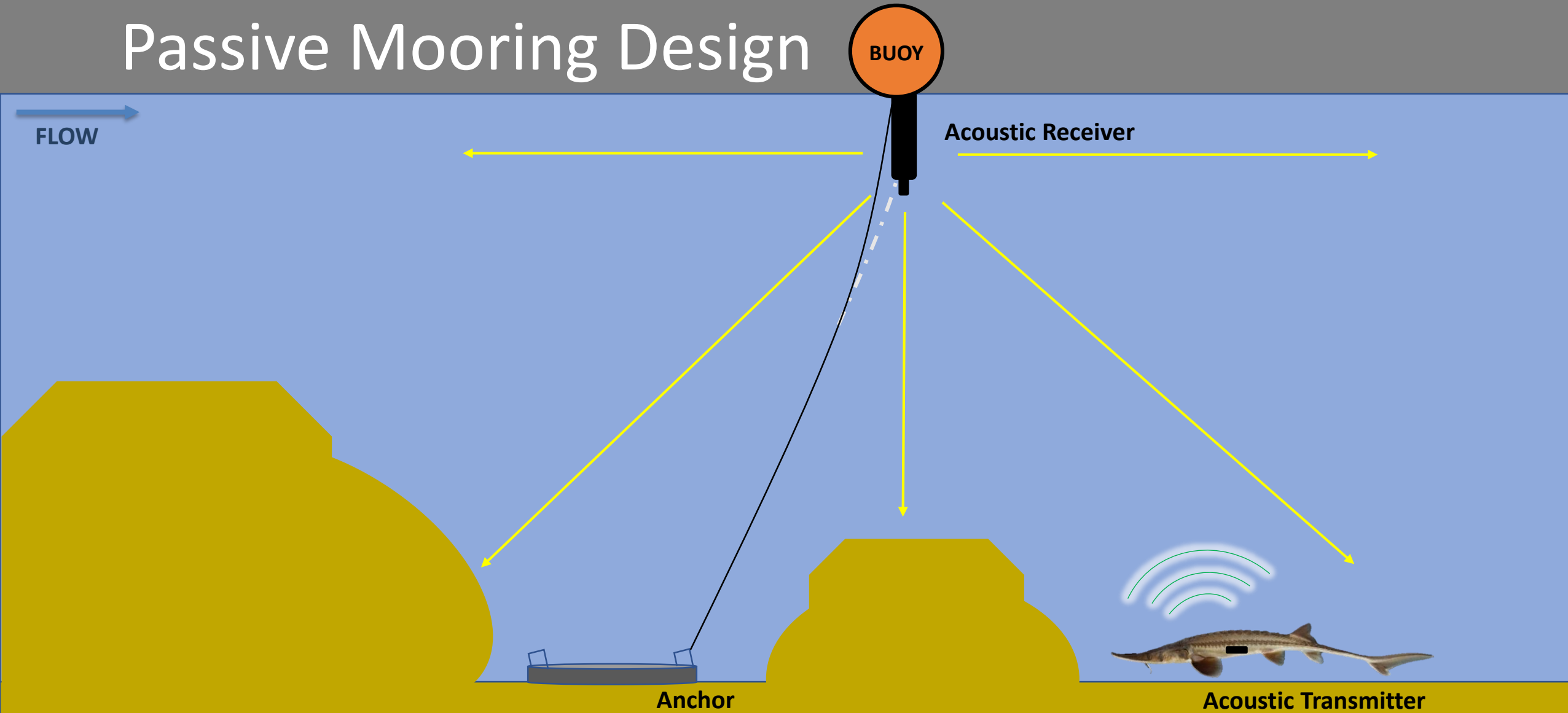




# Elkhorn Transitions



# Passive Mooring Design



# Passive Mooring Design



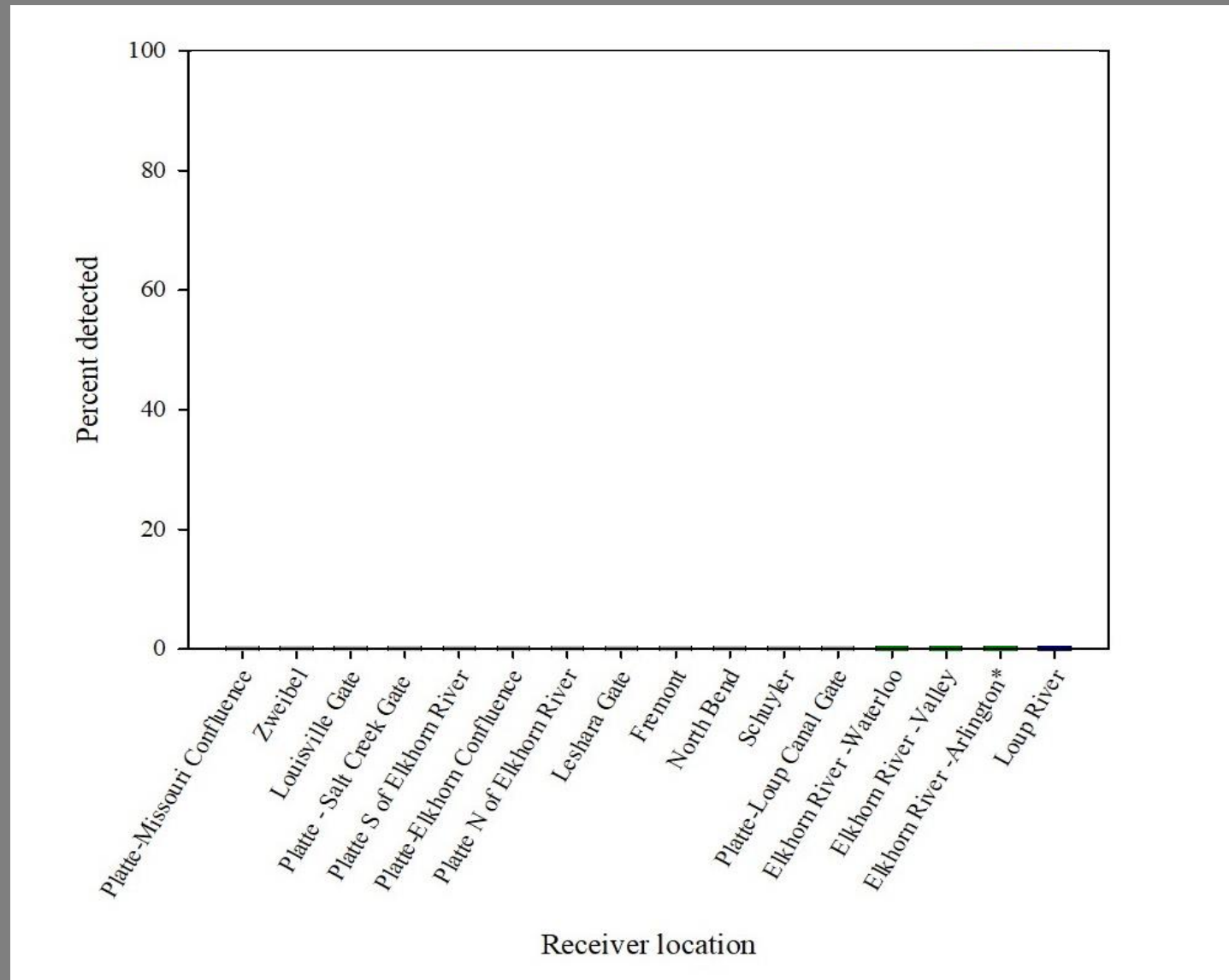


# Passive Mooring Design

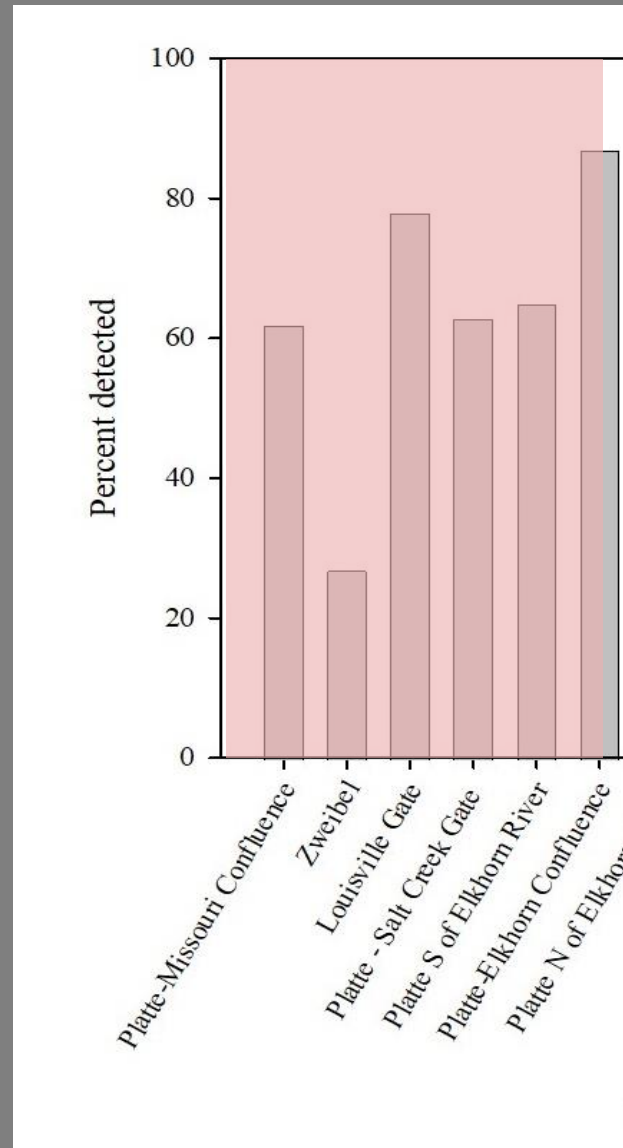




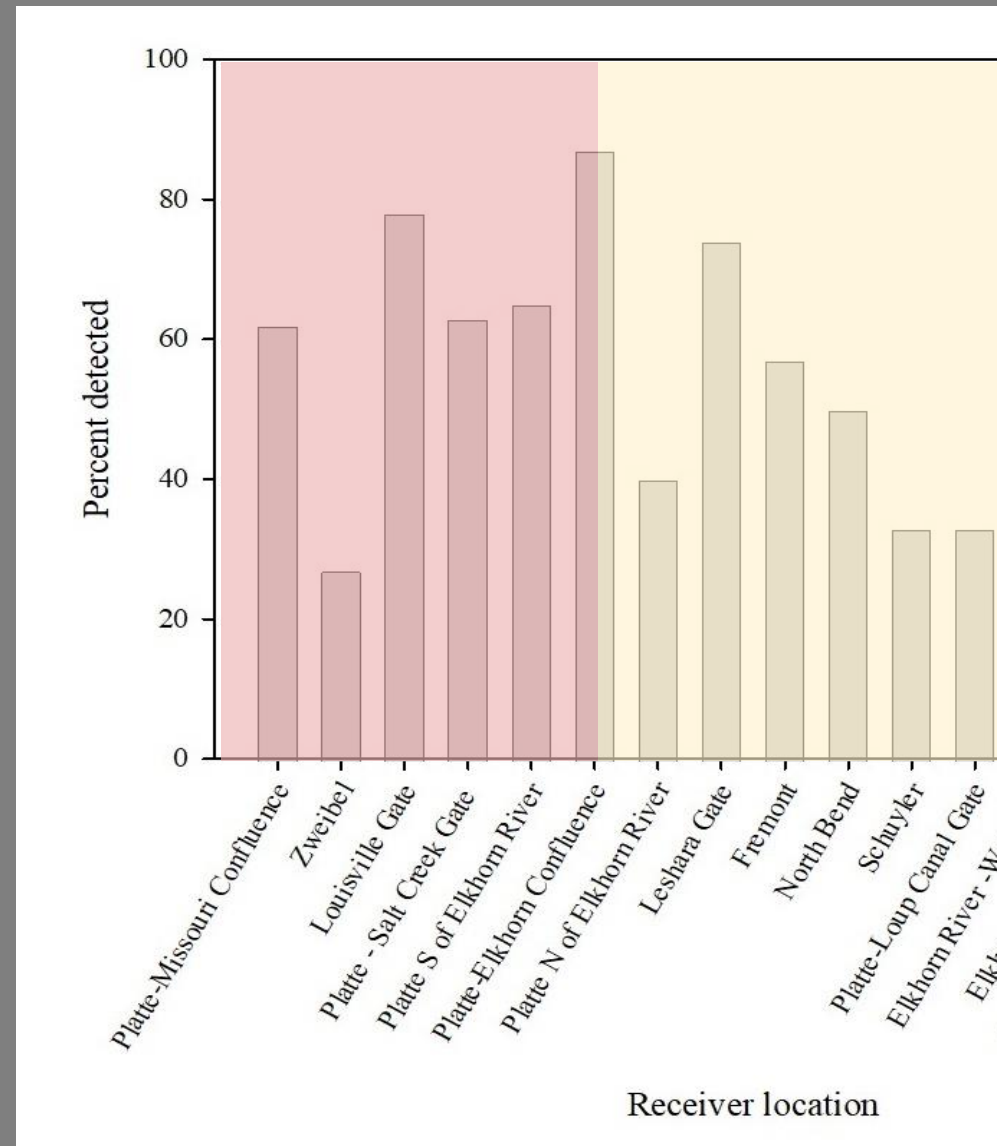
# Passive receiver detection efficiency (of sorts)



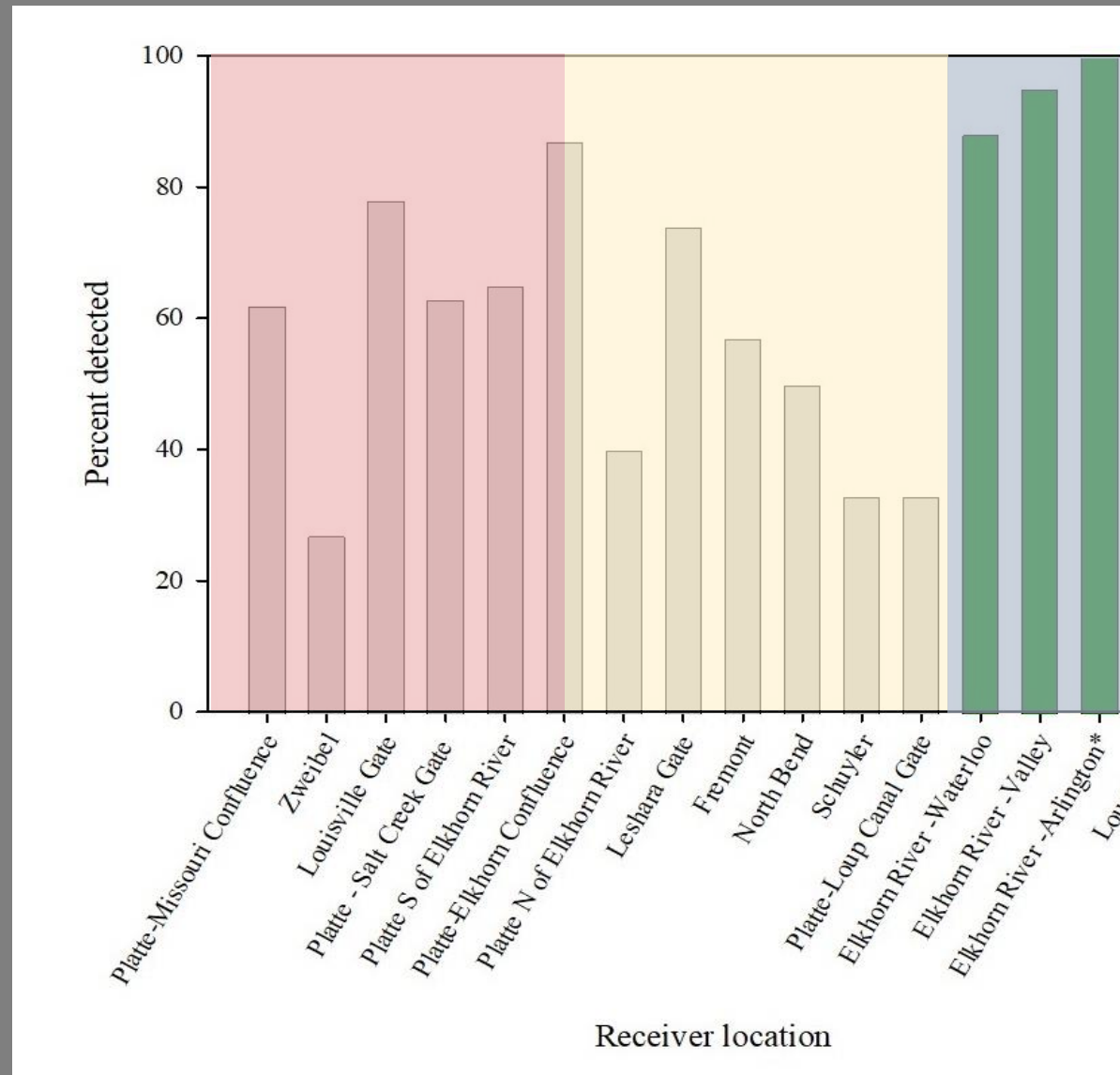
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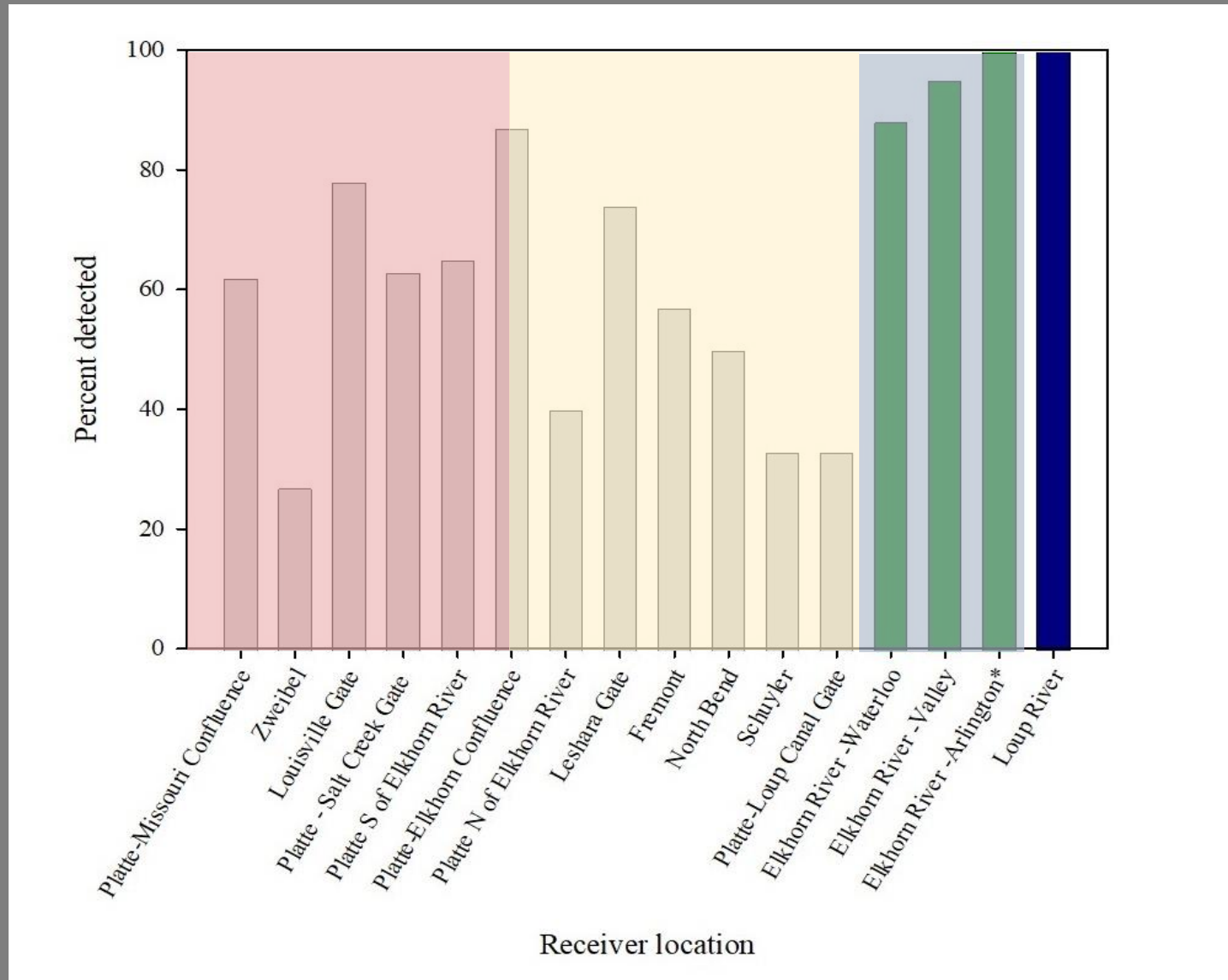


# Passive receiver detection efficiency (of sorts)

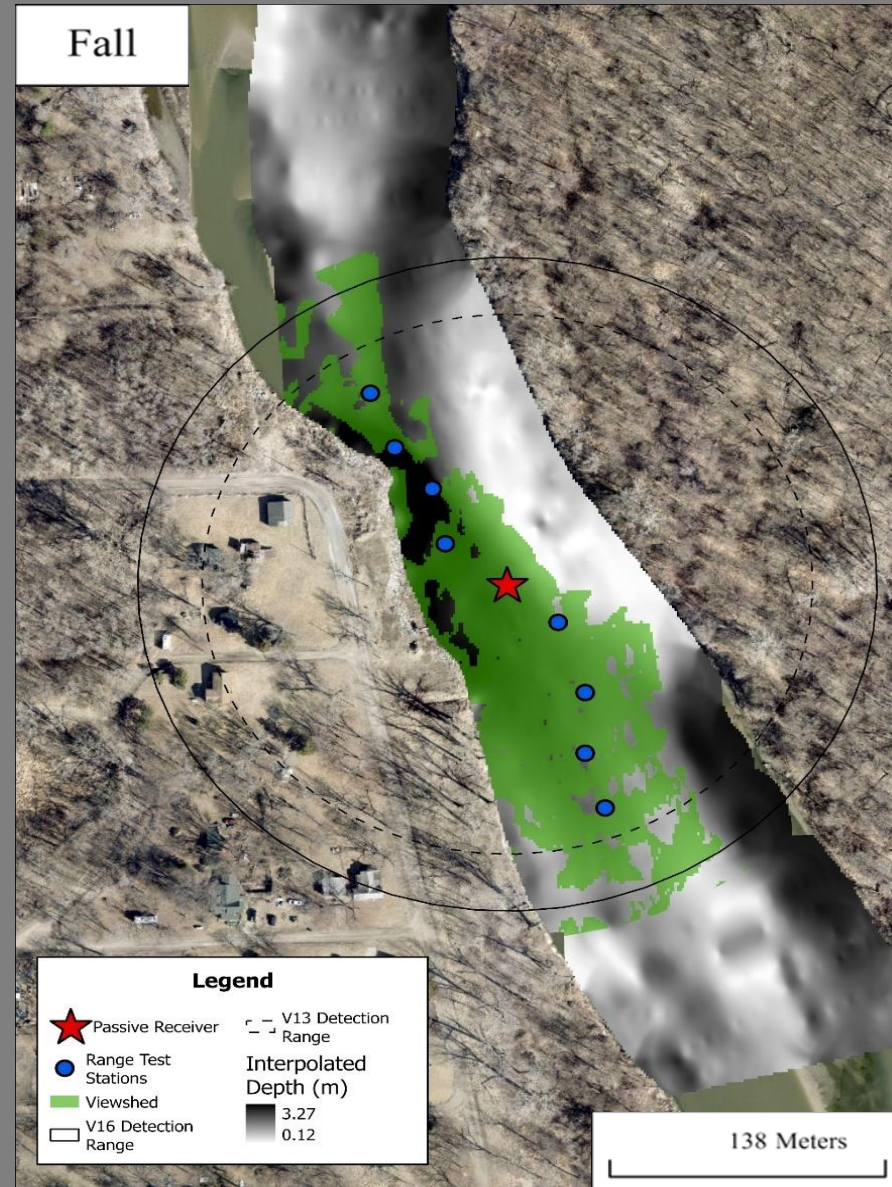




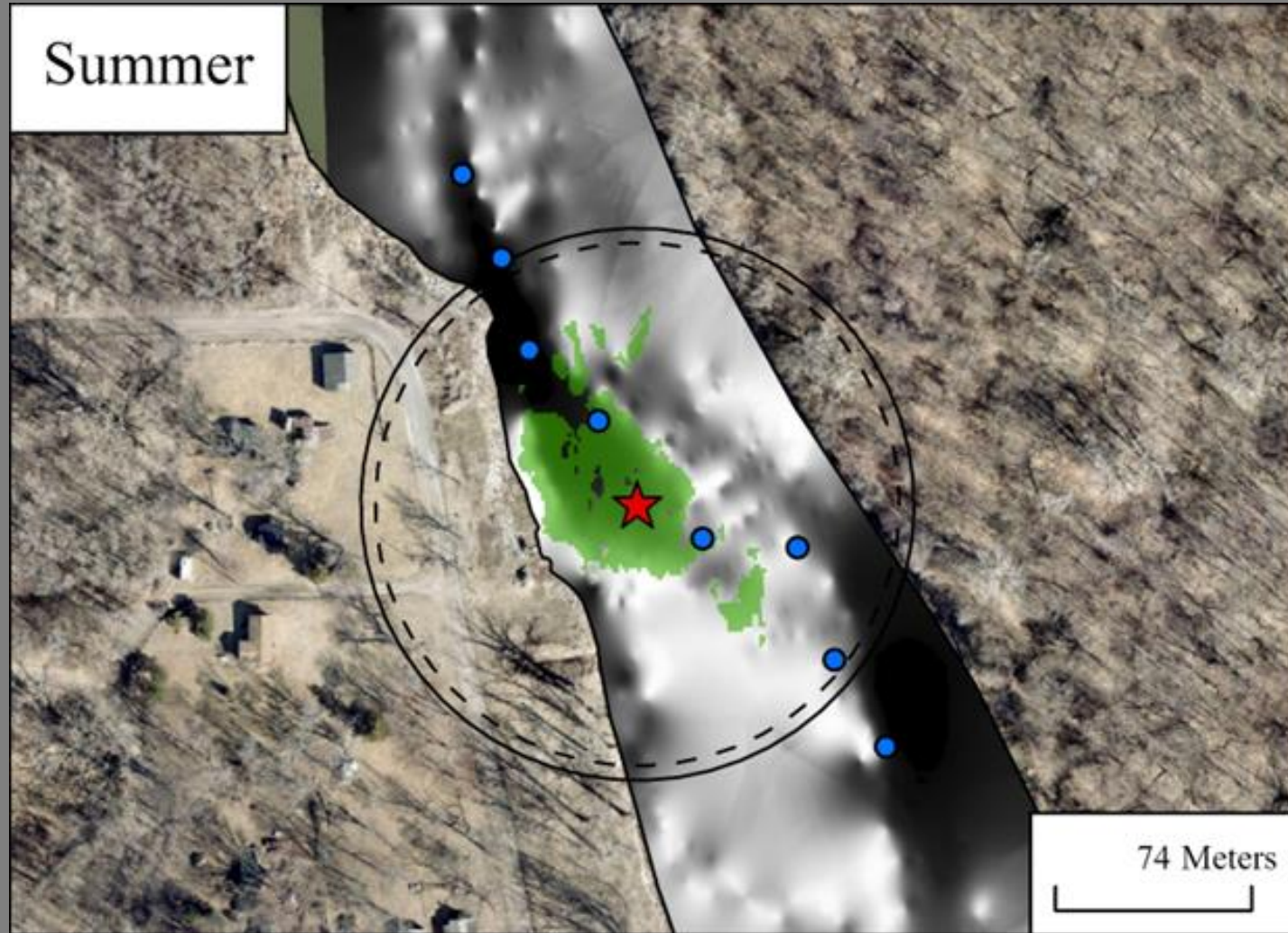
# Passive receiver detection efficiency (of sorts)



# Viewshed Analysis – Waterloo (Elkhorn)

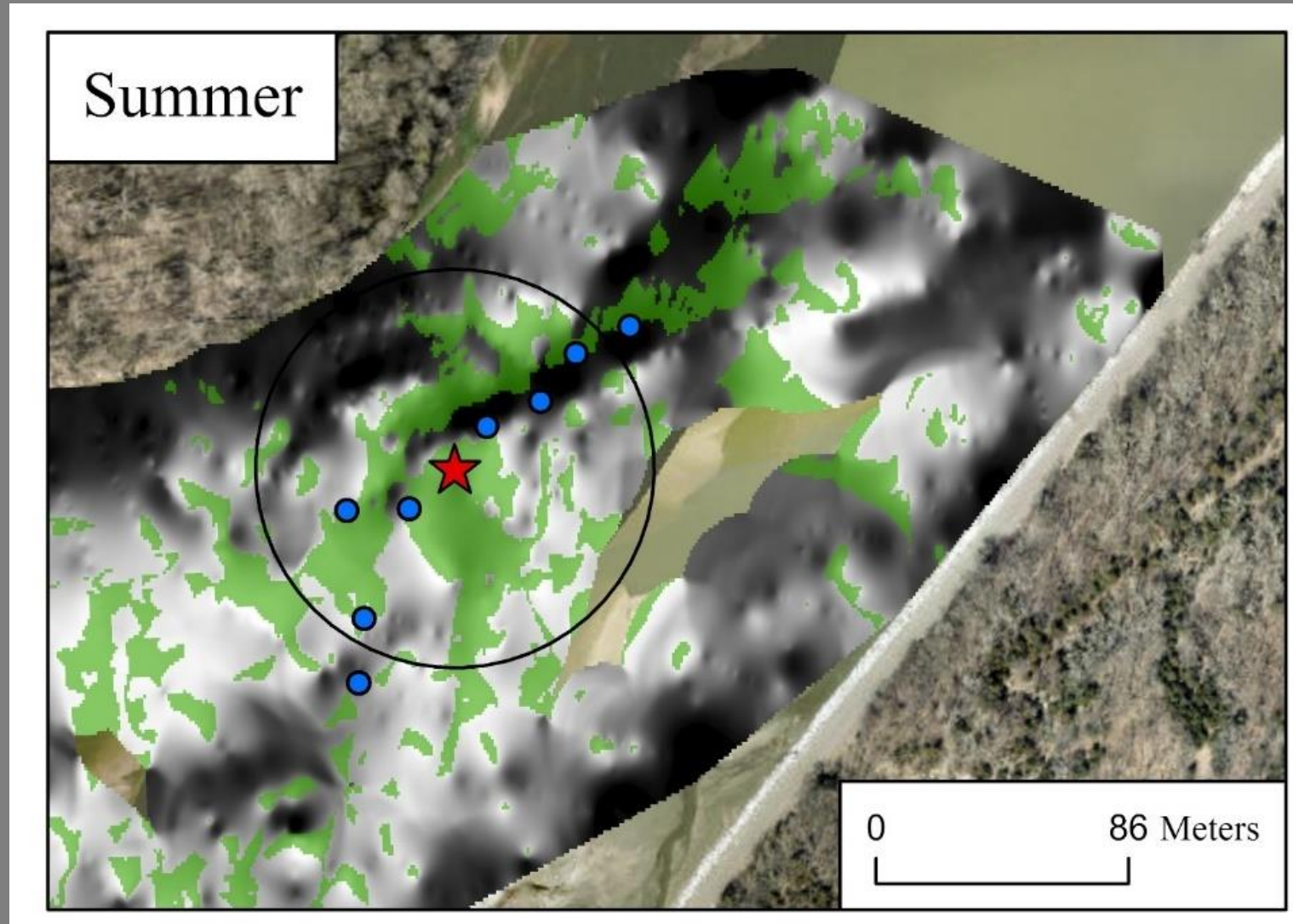


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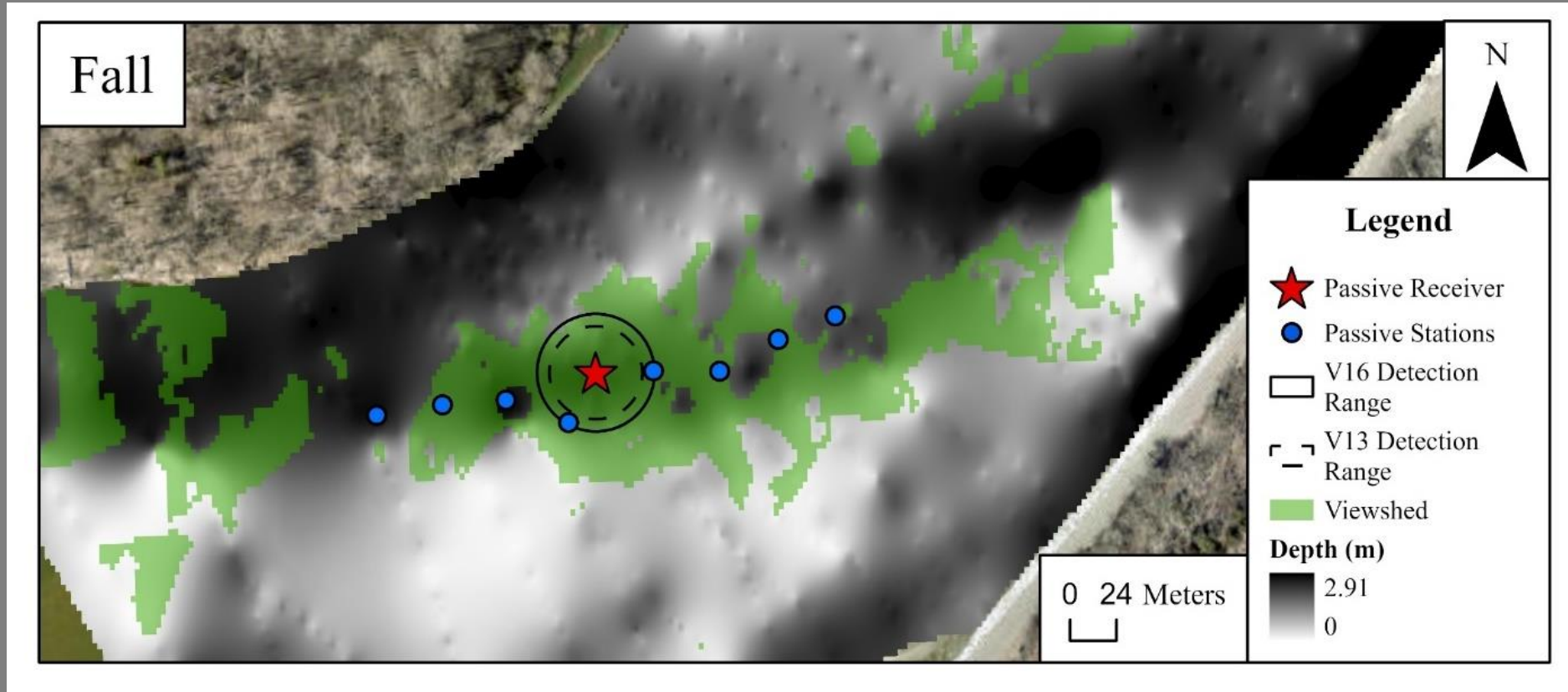


# Viewshed Analysis – Platte River (Louisville)

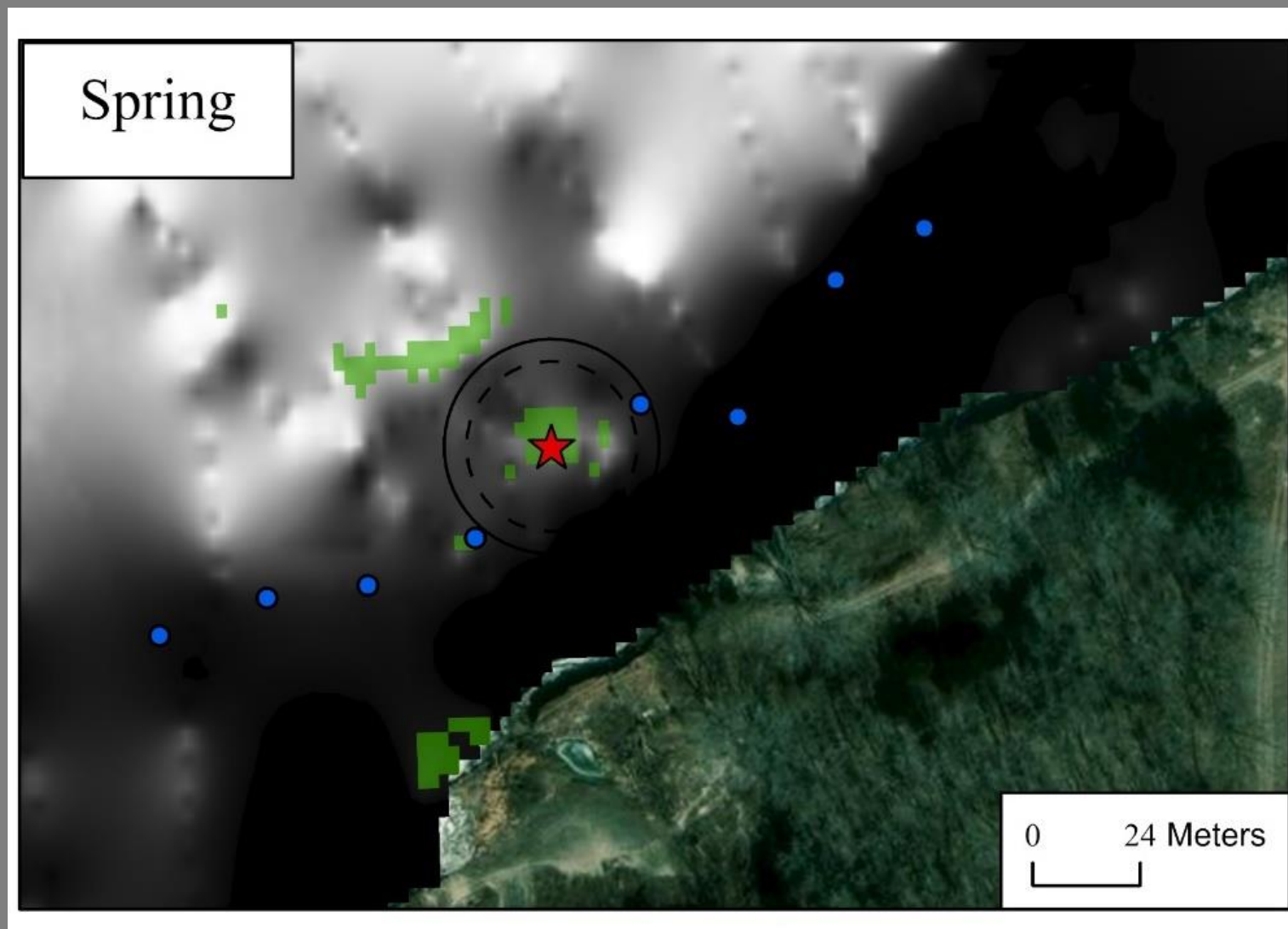




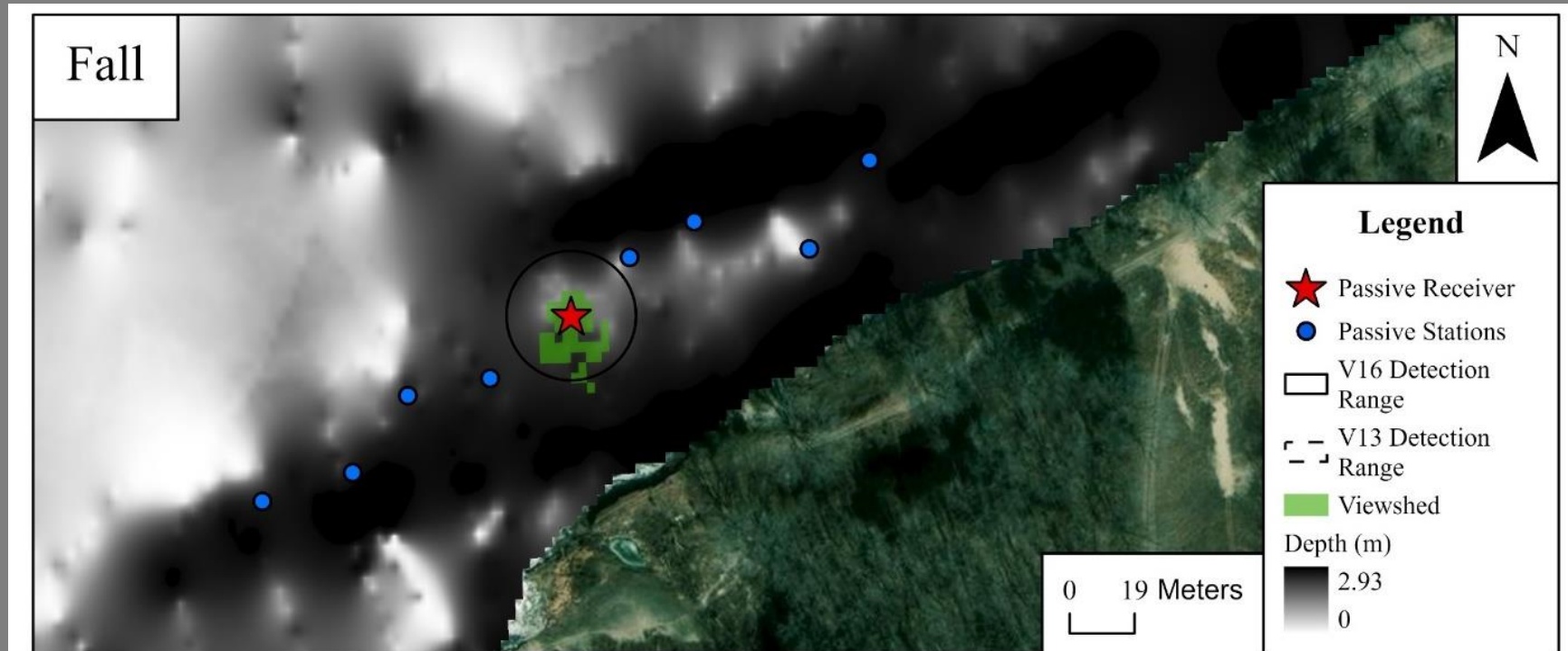
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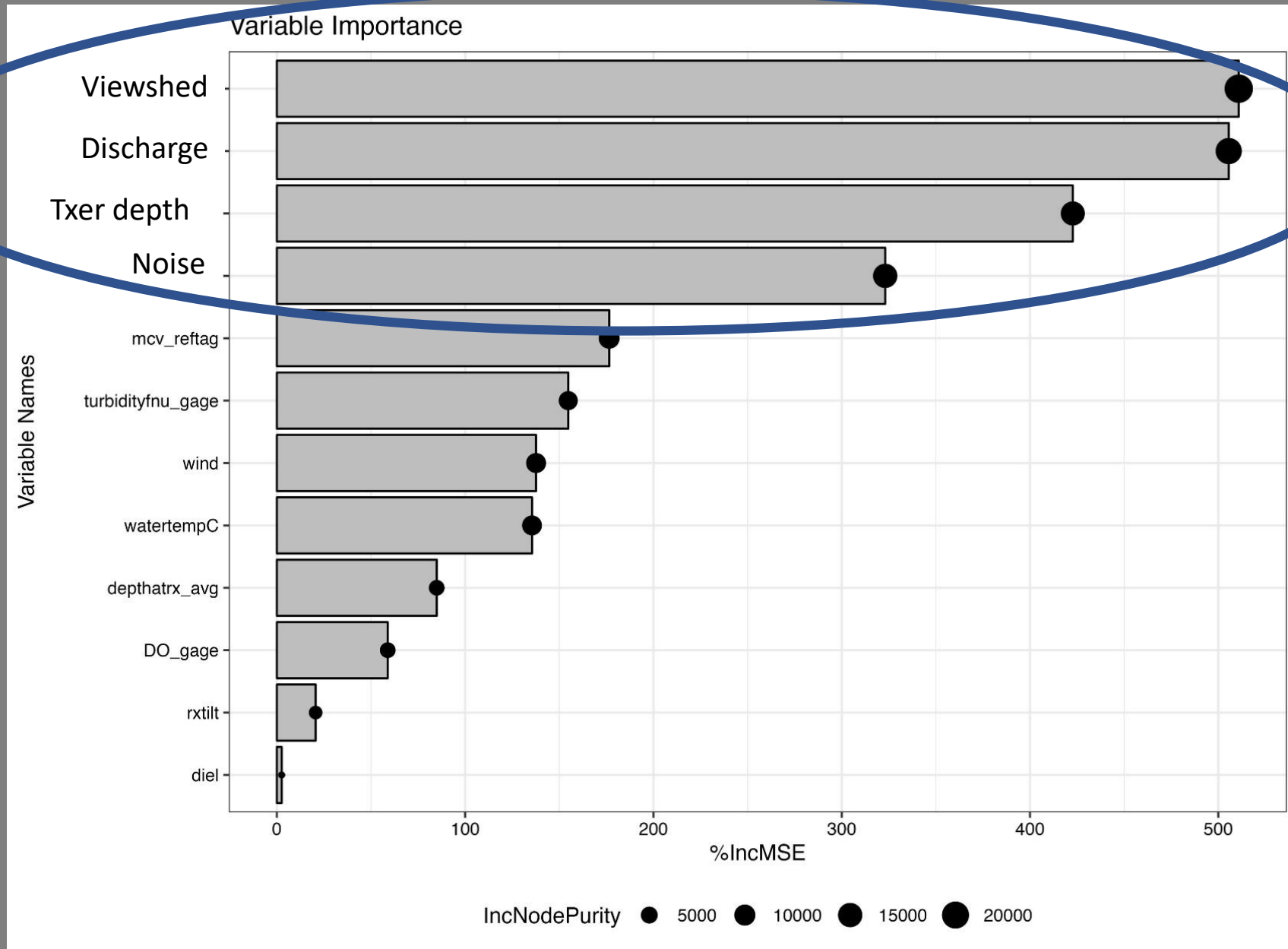
# Viewshed Analysis – Platte River (North Bend)



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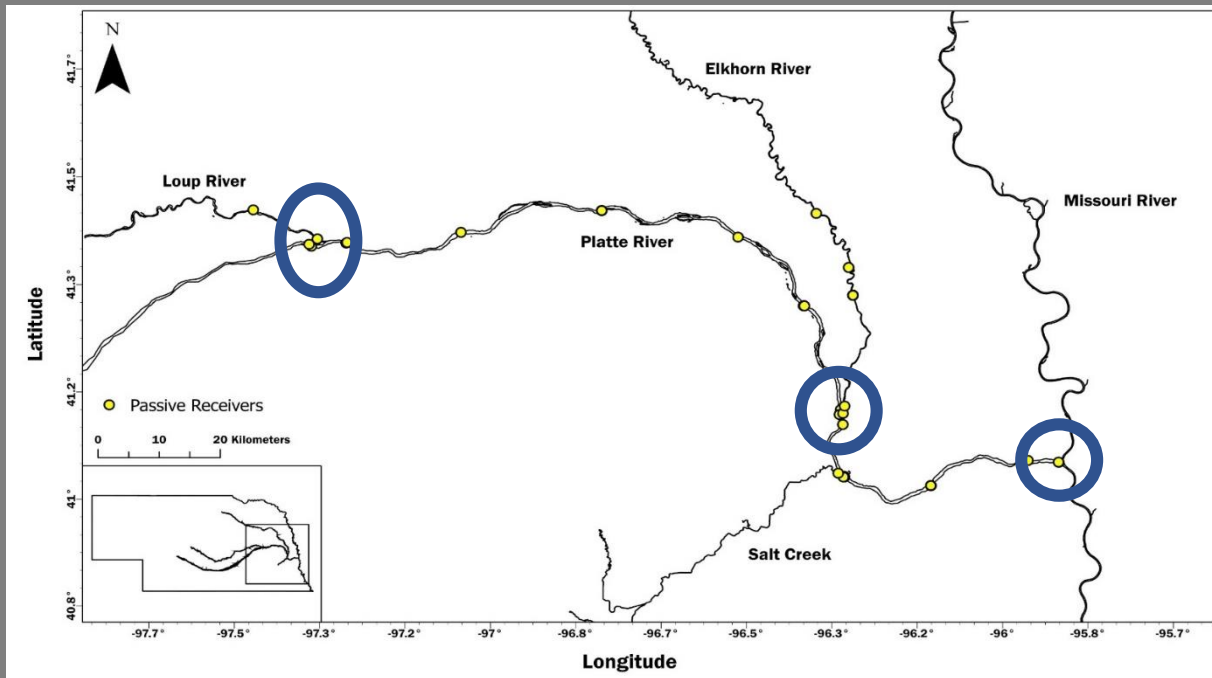


# Random Forest Model



## Objective 1:

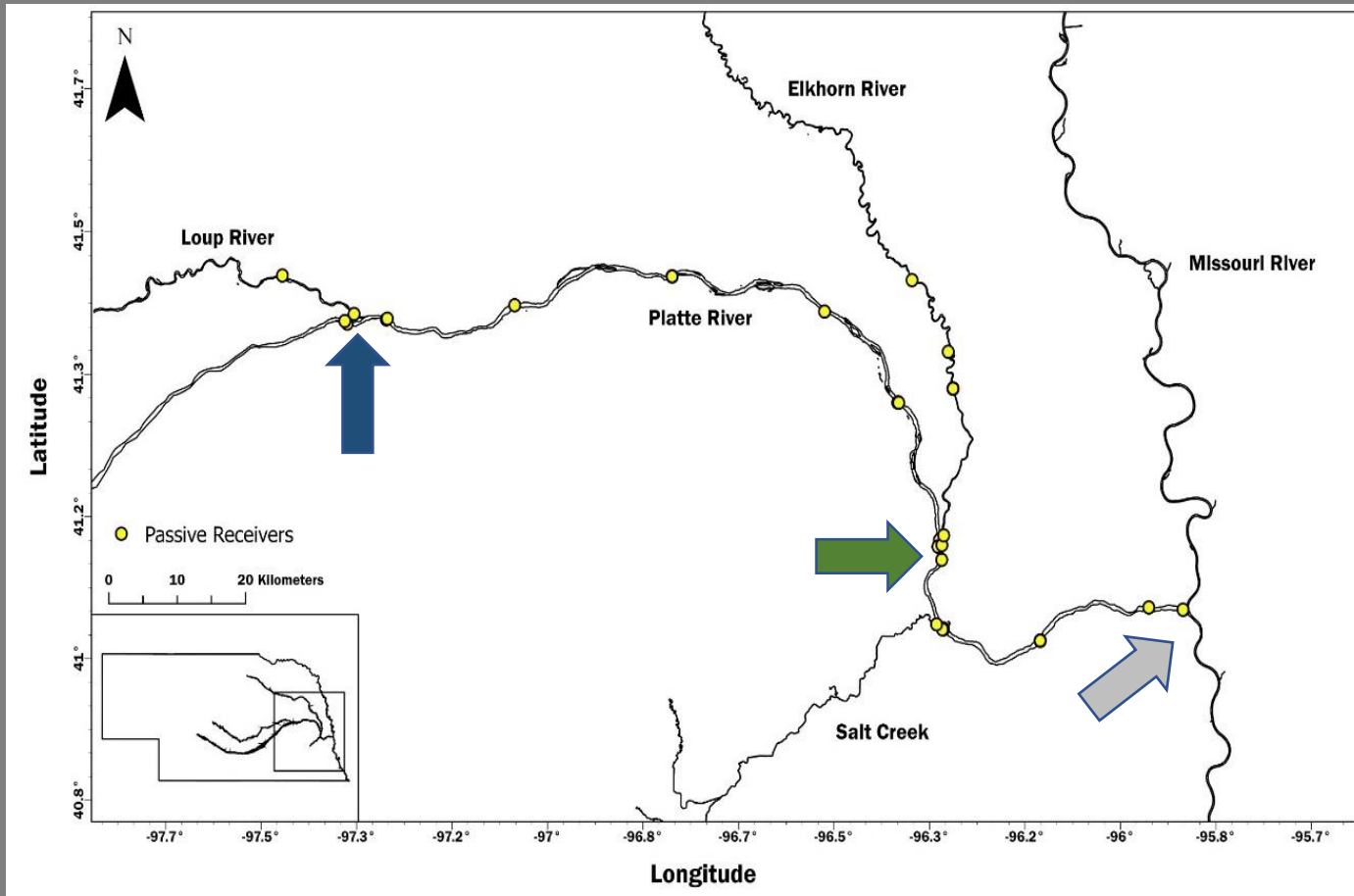
Identify relations among environmental conditions (i.e., river discharge and temperature) with the timing and extent of Pallid Sturgeon movement into and within the lower Platte River.



## Confidences:

- Movement into/within Platte River
  - Sample sizes
  - Model convergence
- Tie to environmental variables as triggers
  - Describe conditions associated with movement
  - Identify specific events to cause movement

# Adjustment options

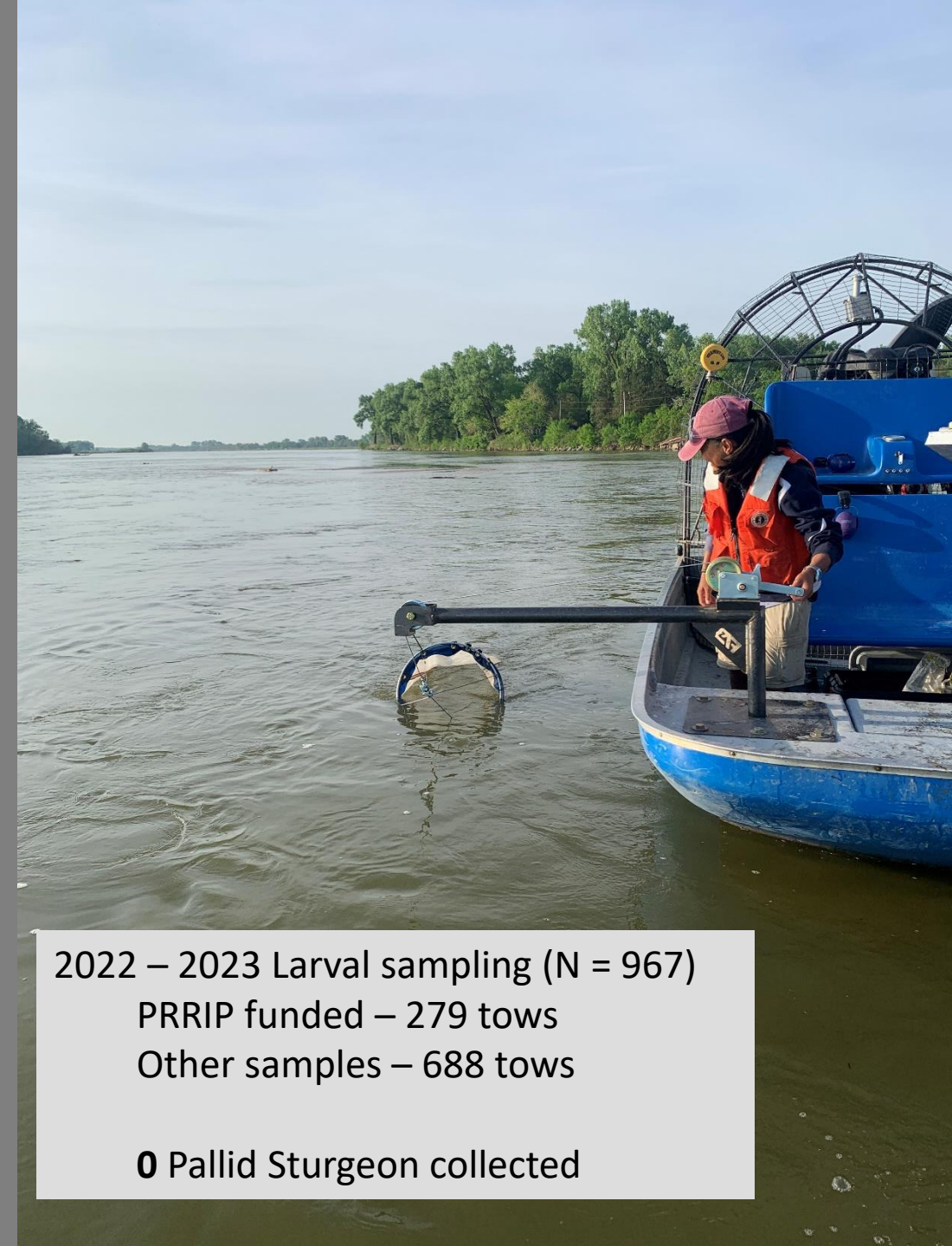


- Bolster key “gates”
  - Transition points
  - Directional confirmation
- Bolster receiver locations
  - Saturate current locations where detections are low/poor efficiency
    - North Bend, Fremont, etc.



## Objectives 2 & 3:

- Identify Pallid Sturgeon spawning habitat in the lower Platte River and its tributaries.
- Verify successful spawning by Pallid Sturgeon in the Platte River and/or its tributaries.



2022 – 2023 Larval sampling (N = 967)

PRRIP funded – 279 tows

Other samples – 688 tows

**0** Pallid Sturgeon collected





Thank You  
Questions?