



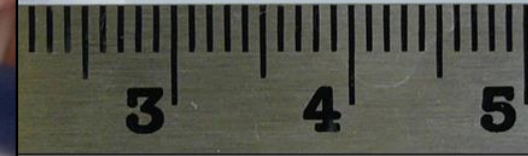
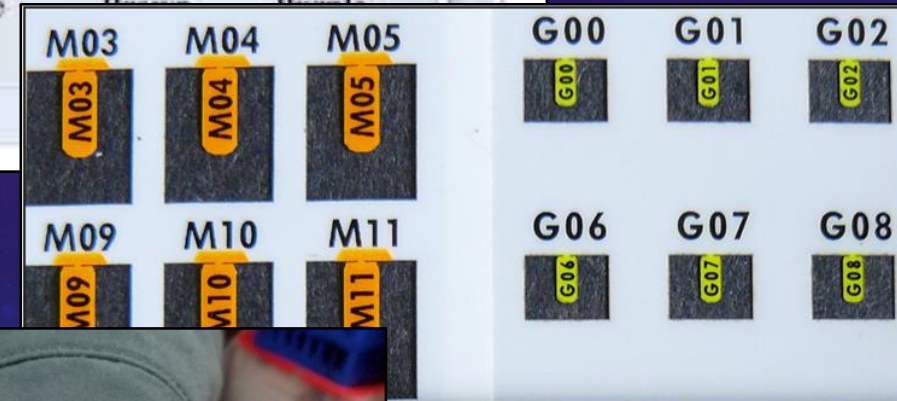
# LONG-TERM MARKING SUCCESS OF SALAMANDER SPECIES

SMARC STAFF

# OBJECTIVES

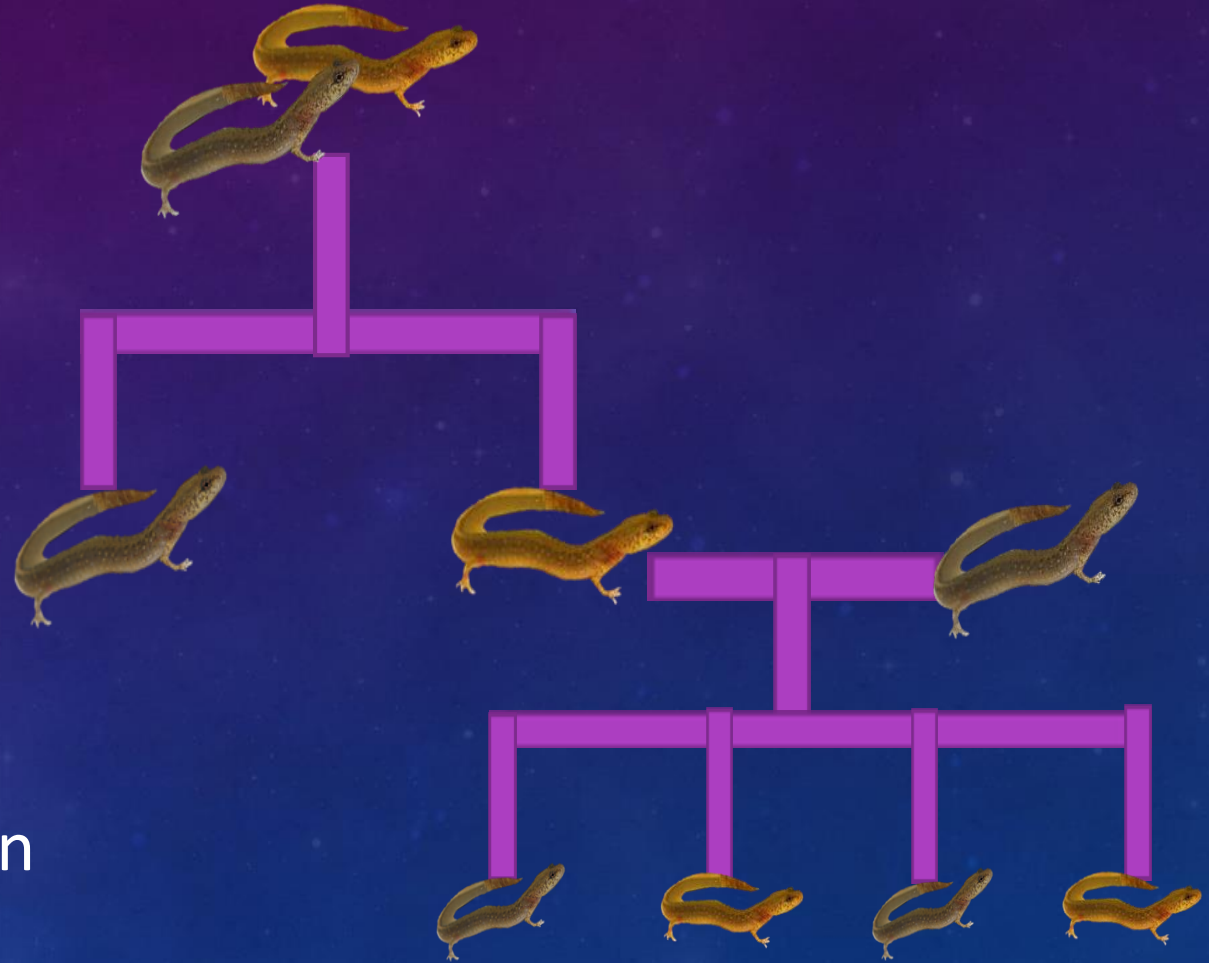
◎ The goal of the research is to evaluate utility of different tagging methods.

- ✦ Visible Implant Elastomer (VIE)
- ✦ Visual Implant Alphanumeric (VIA)
- ✦ Small passive integrated transponders (PIT)



# EXPECTED BENEFITS TO REFUGIA

- ⦿ Allow for efficiencies in refugia operations
  - ✦ Consolidation of specimens
- ⦿ Individual monitoring over lifetime
- ⦿ Genetic and parental management plans
- ⦿ Capture-mark-recapture/ reintroduction





# VISIBLE IMPLANT ELASTOMER

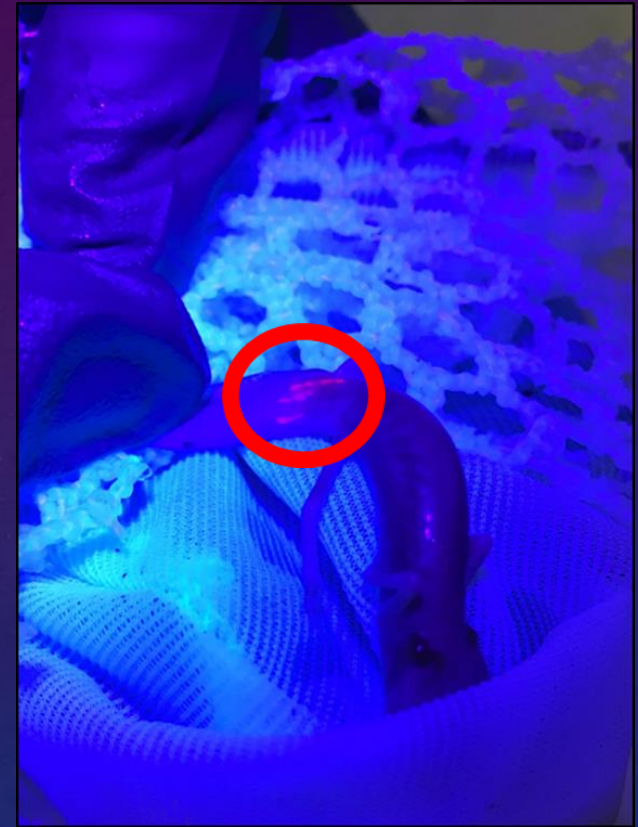
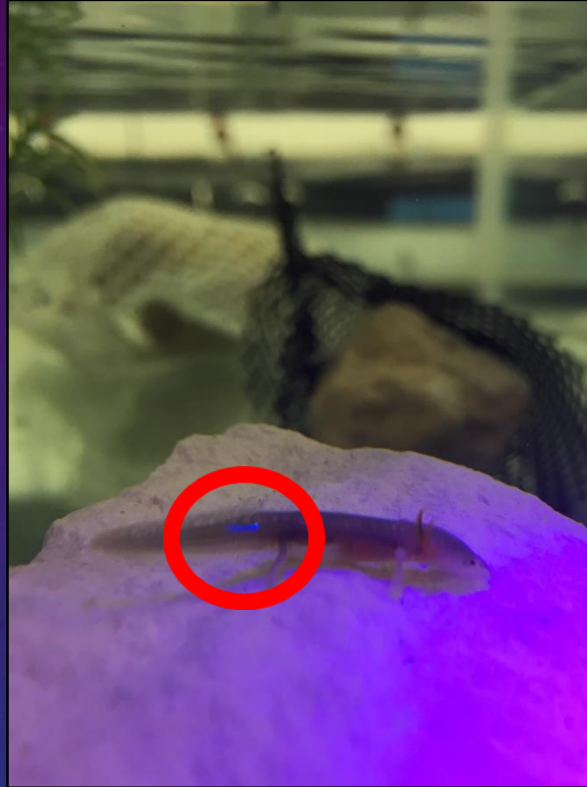
- ◎ Recommended shelf life of 1 year
- ◎ 10 available colors
  - ✦ 6 fluorescent colors
  - ✦ 4 non fluorescent colors
- ◎ Useful for tagging by locations/sex
  - ✦ more complicated for individual purposes

Pros	Cons
<ul style="list-style-type: none"><li>• Individual combos</li><li>• Easily seen with UV light</li><li>• Subcutaneous</li></ul>	<ul style="list-style-type: none"><li>• Hardens</li><li>• Migration/breakage</li><li>• Can misidentify colors</li></ul>



# PREVIOUS TAGGING EFFORTS

- Will continue with VIE tagging of salamanders
  - ✦ Evaluate tagging efforts over the past two years



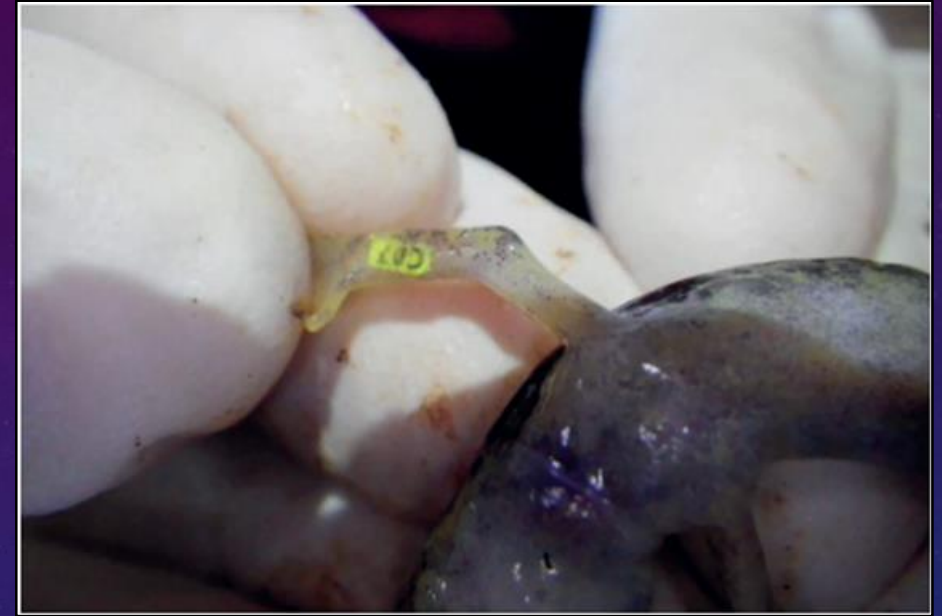
- Take photographs of current and future tagged individuals to monitor tag migration
- 512 individual combinations for SMARC Texas blind salamanders



# VISIBLE IMPLANT ALPHANUMERIC

- Small fluorescent tag with an alphanumeric code
- Standard size tags: 1.2mm X 2.7mm
- Colors: red, orange, yellow, green
- Total of 10,000 codes available

Pros	Cons
<ul style="list-style-type: none"><li>• Individual codes</li><li>• Subcutaneous</li></ul>	<ul style="list-style-type: none"><li>• Injection issues</li><li>• One color for letters</li></ul>



# PASSIVE INTEGRATED TRANSPONDER

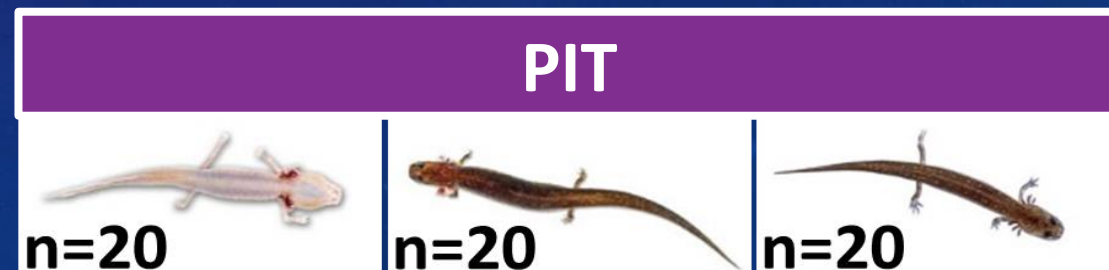
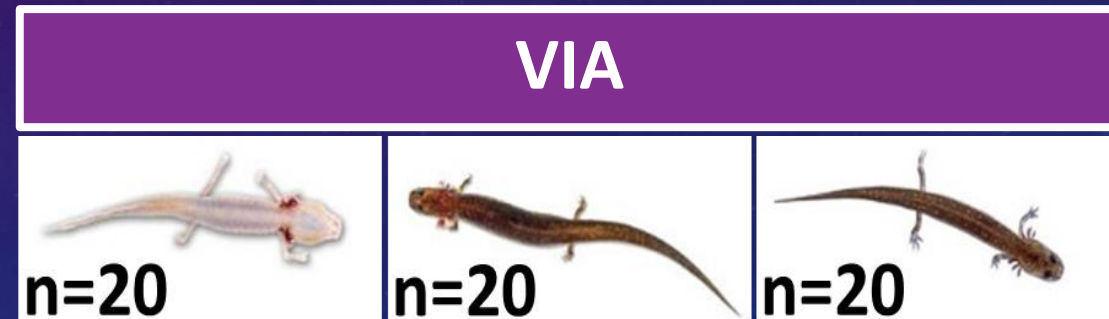
- Small radio transponder that contains a specific code
- 8 mm tag available
- Do not require a battery



Pros	Cons
<ul style="list-style-type: none"><li>• Long lasting</li><li>• Infinite combinations</li></ul>	<ul style="list-style-type: none"><li>• Size</li><li>• RFID reader</li></ul>

# TAGGING INDIVIDUALS

- F1 salamanders
- 20 individuals from each species will be tagged with one of the three markers
- Steps:
  1. Anesthetize
    - ❖ Length & weight taken; salamander sexed
  2. Tag individual
  3. Picture taken of tag
  4. Place in flow through container for recovery
  5. Monitor animal health and tag retention monthly





# DATA COLLECTED

- Tag retention
- Health (body condition, weight, infection @ tag site)
- Create a matrix to analyze tagging methods
  - ✦ Learning curve of tagger
  - ✦ Ease of injection
  - ✦ Cost
  - ✦ Readability



# RESULTS & REPORTING

- Final report given at end of 2019
- Culture Propagation Manual Update
- Most successful method will continue to be implemented in future





# COMMENTS & QUESTIONS