

CAMO, HOSE CLAMPS, AND PIXELS:

ARIZONA'S APPROACH FOR LOW-COST INTERMITTENT STREAM MONITORING

MEGHAN SMART, HYDROLOGIST



MAY 5, 2016





Surprise!

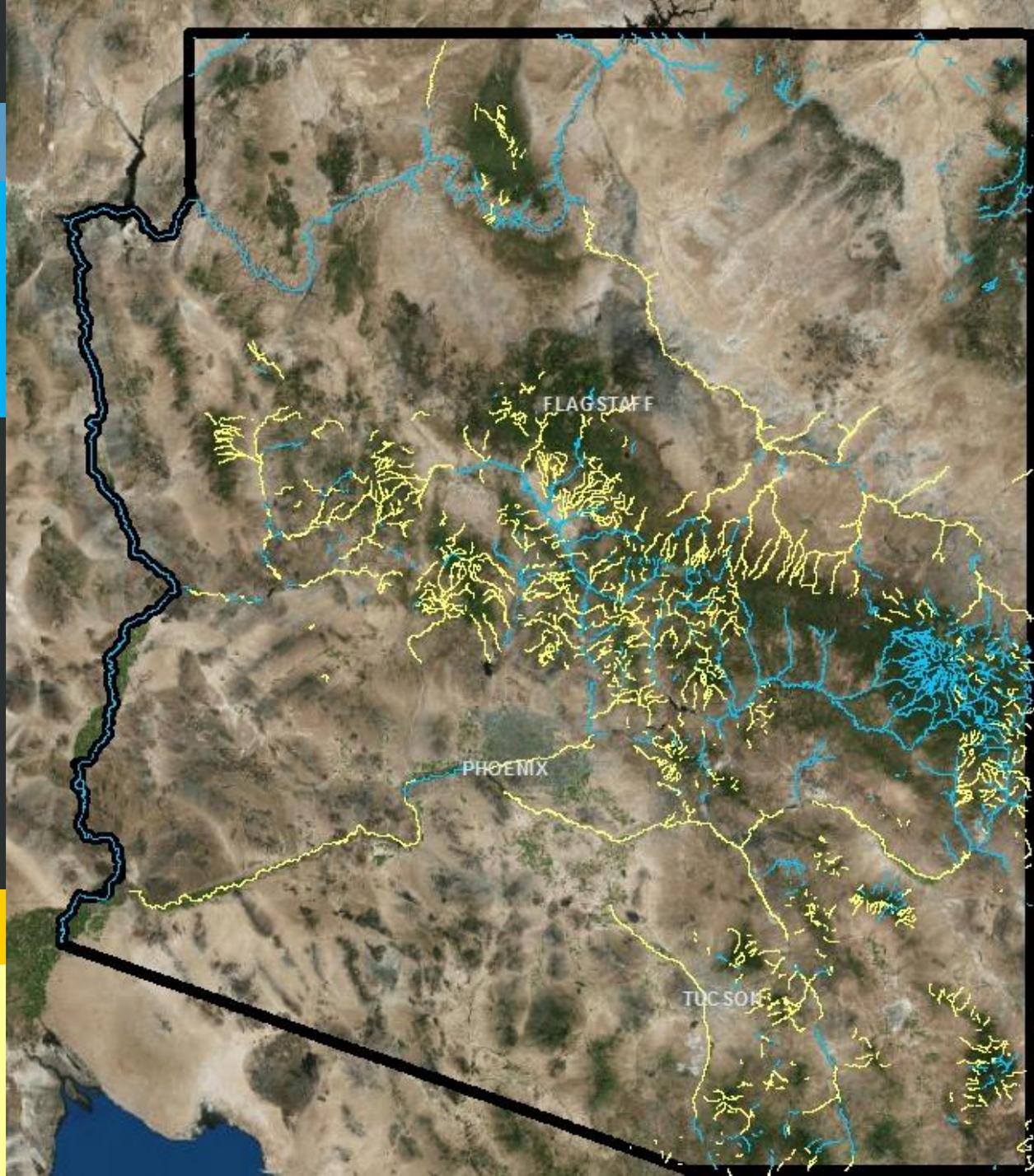
Arizona 2016 Assessment

Perennial Streams

Perennial Streams = 40% Assessed

Intermittent Streams

Intermittent Streams = 12% Assessed



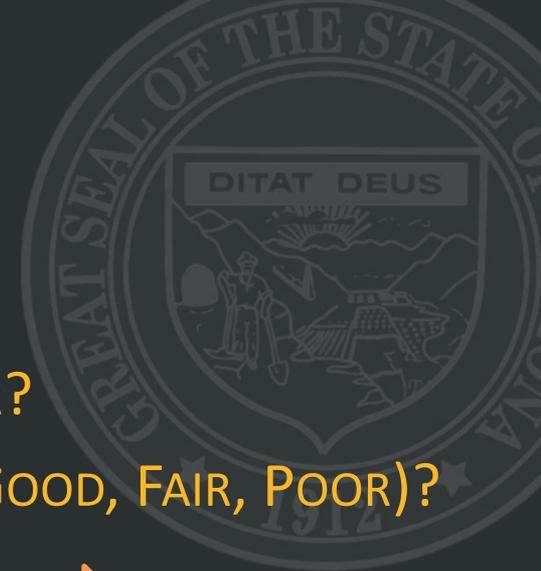
Now What?

6,000 Stream Miles



Three Questions

1. HOW ACCURATE IS OUR MAP?
2. WHAT'S THE FLOW CATEGORY: DAYS OF FLOW PER YEAR?
3. WHAT'S THE CONDITION OF INTERMITTENT STREAMS (GOOD, FAIR, POOR)?



Ephemeral



Perennial



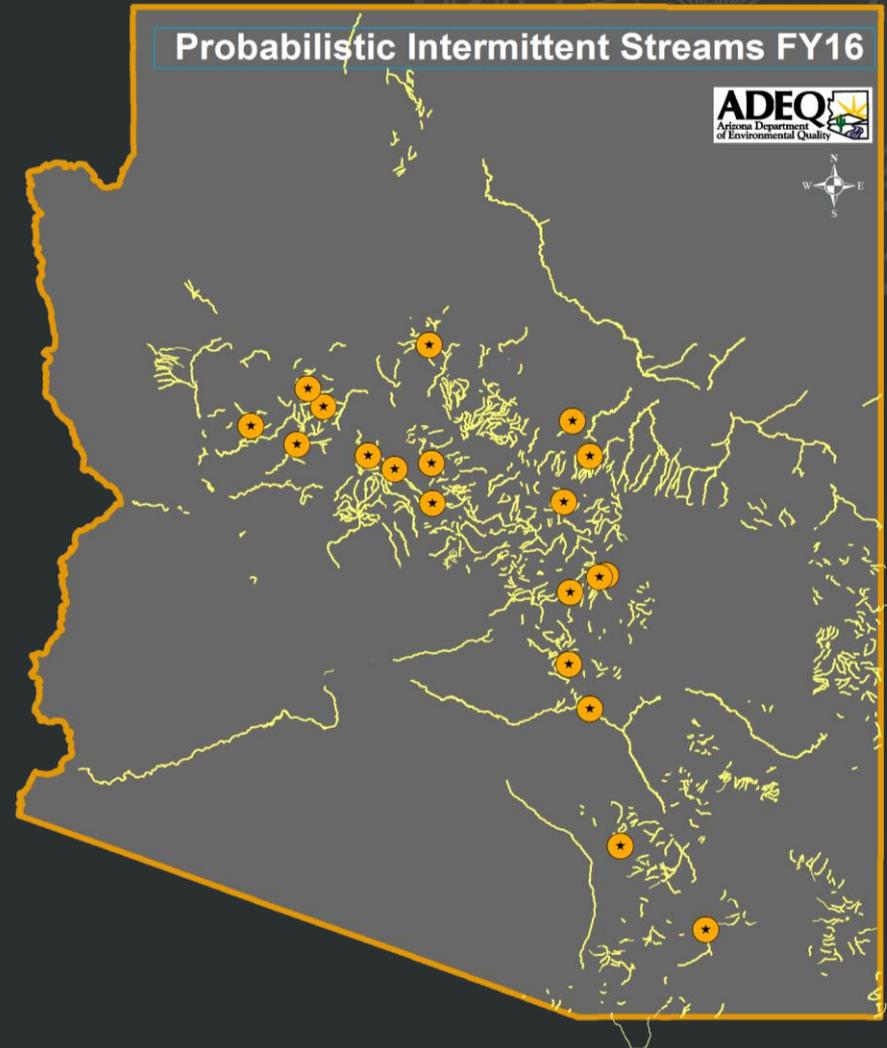
The How

PROBABILISTIC SURVEY

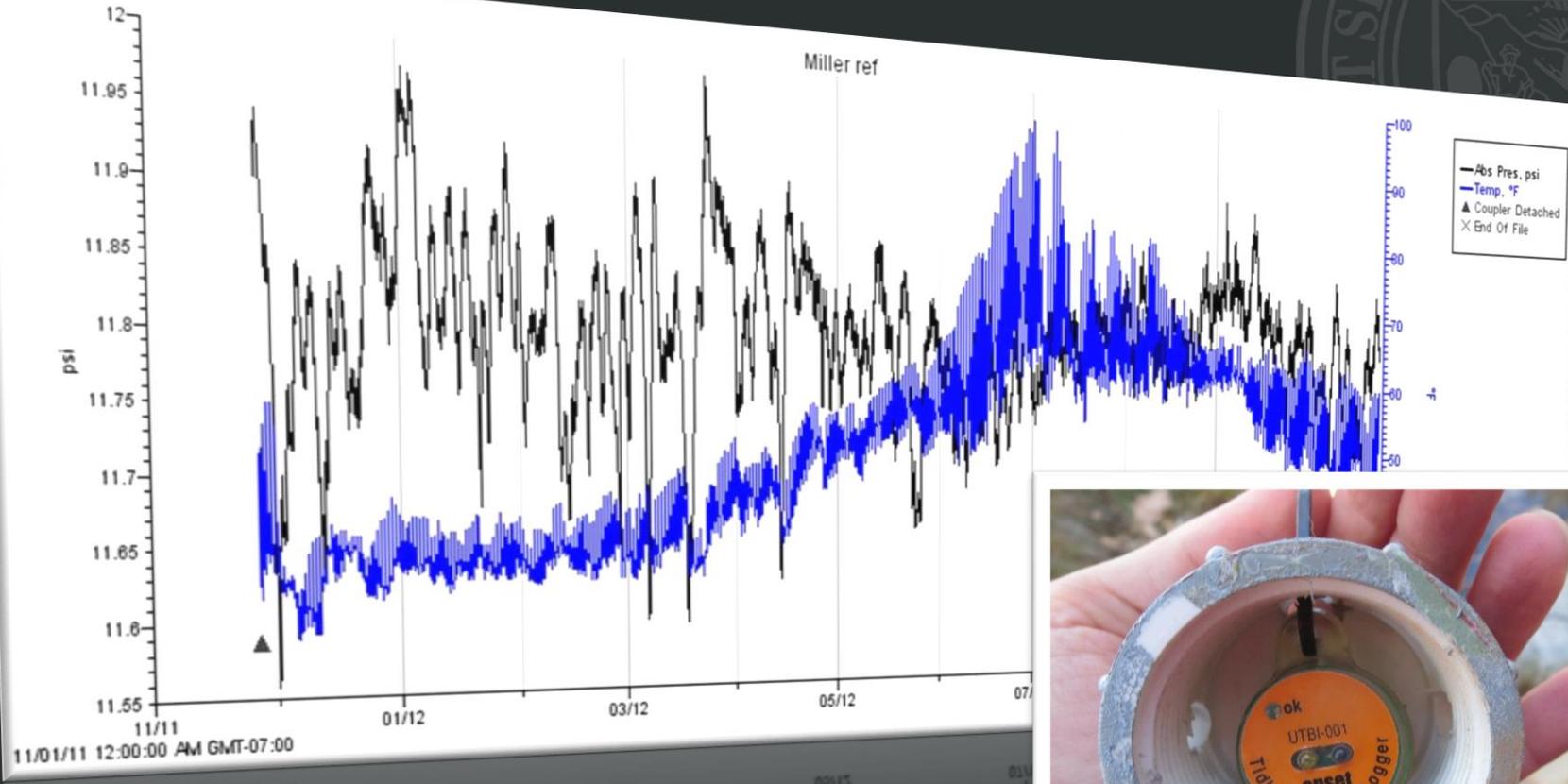
- N=40
- 2 YEAR STUDY

Data:

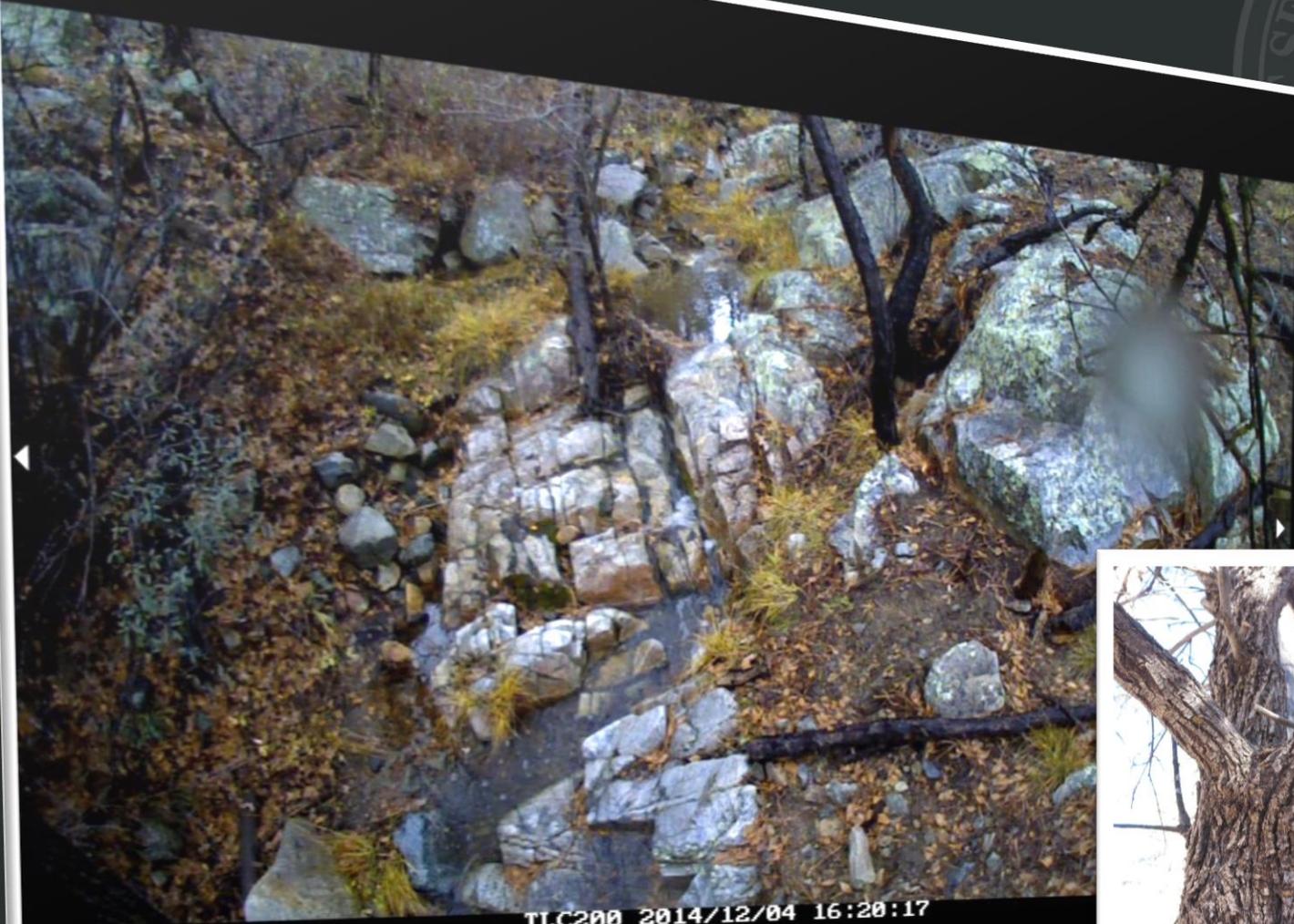
- Chemistry
- Habitat
- Macroinvertebrates
- ? Flow Category Data
(# days/ Year)



Is It Wet?



Is It Wet?



TLC200 2014/12/04 16:20:17



Camera Set-up

Light weight solar panel

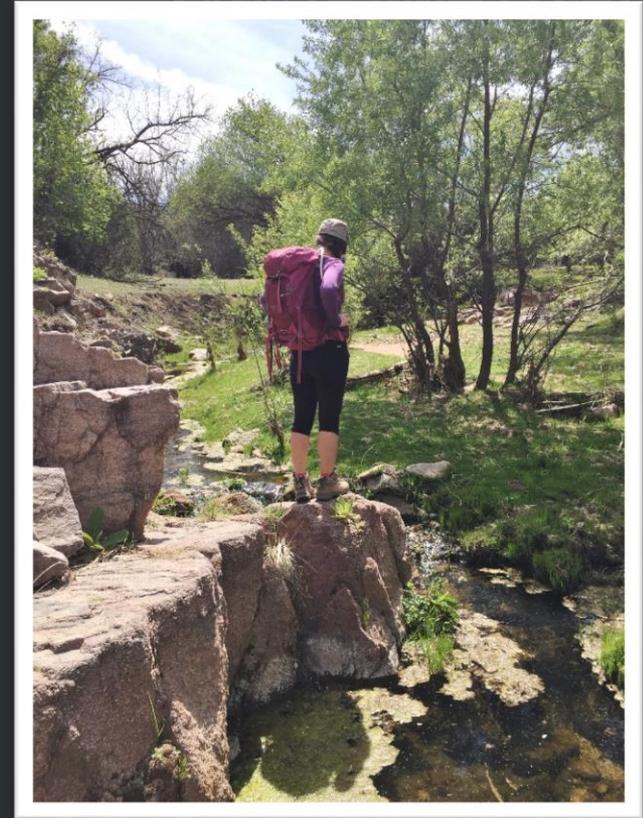
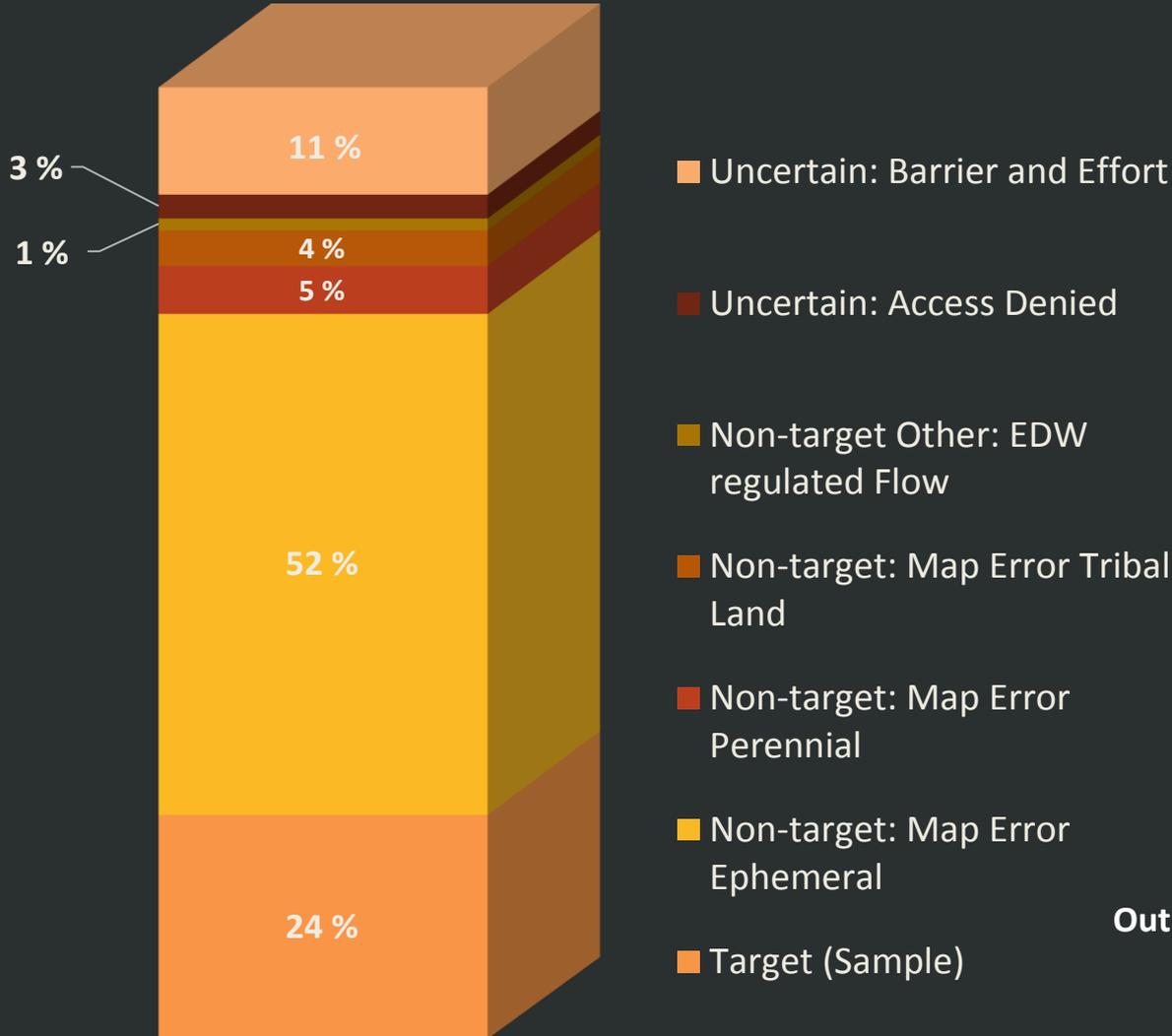


M-550 Moultrie Trail Camera

12 v battery with regulator



Reconnaissance Results



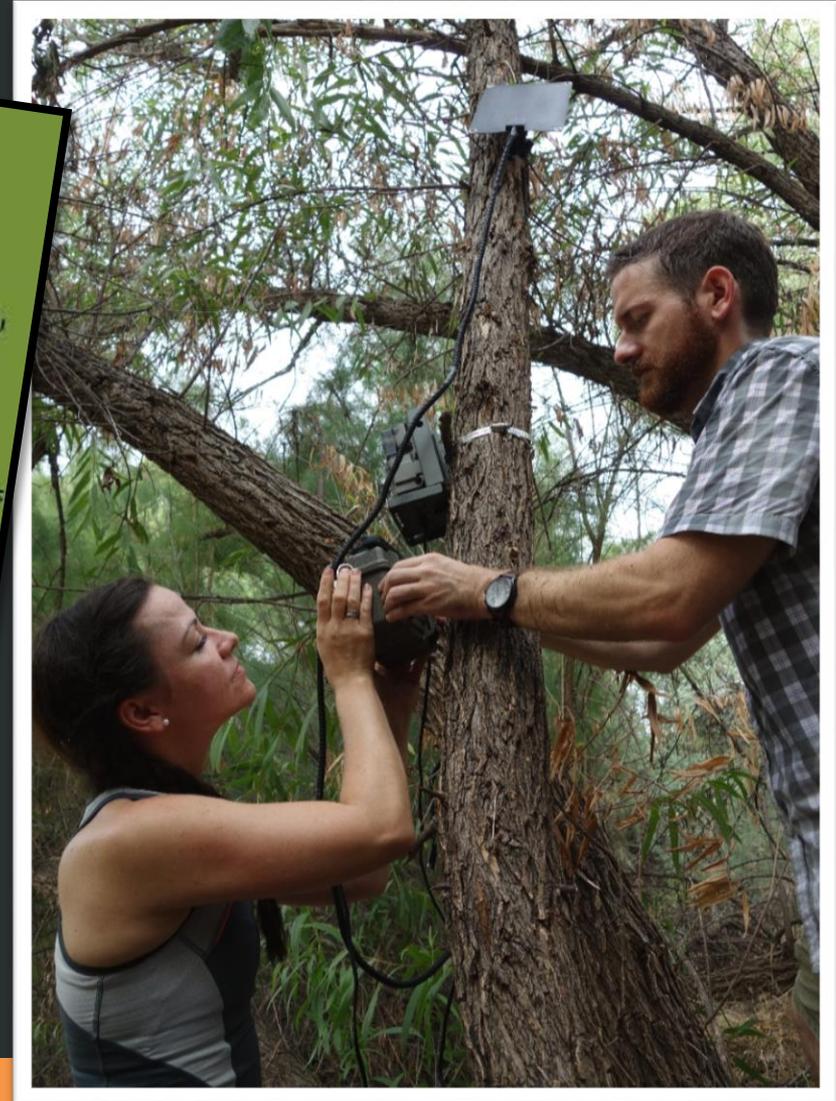
Out of 80 Sites



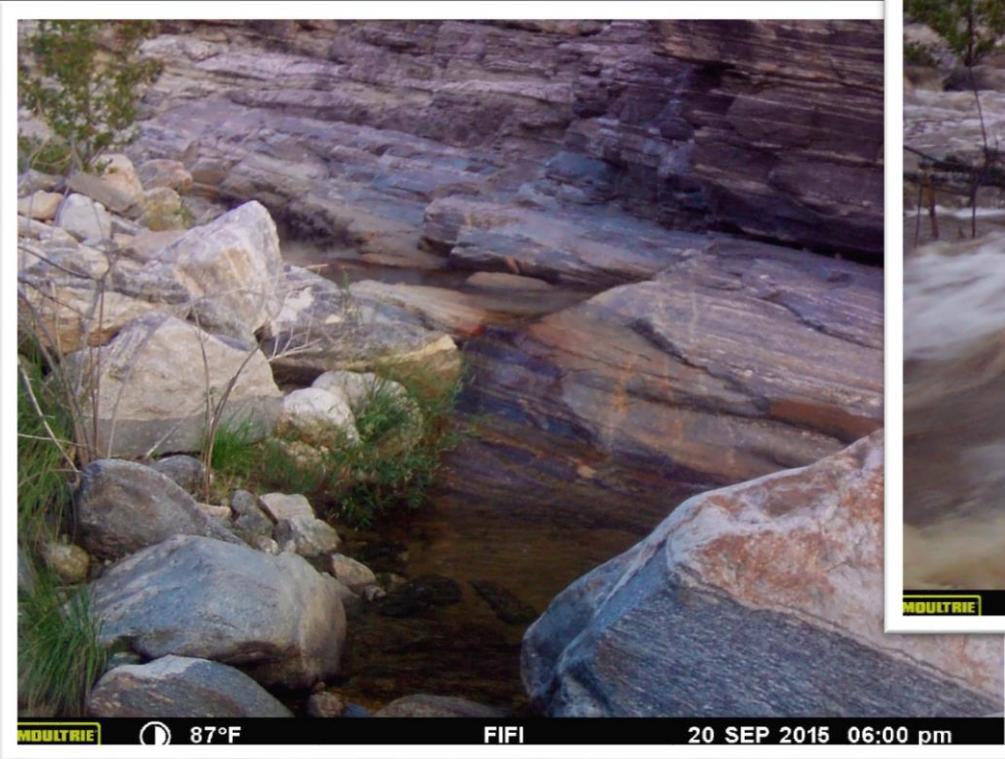
19 Target Sites

Installation

- Above bankfull
- Guess where water will be
- Face camera upstream
- Capture multiple habitats
- Test Shots
- Camo
- Positive information tag



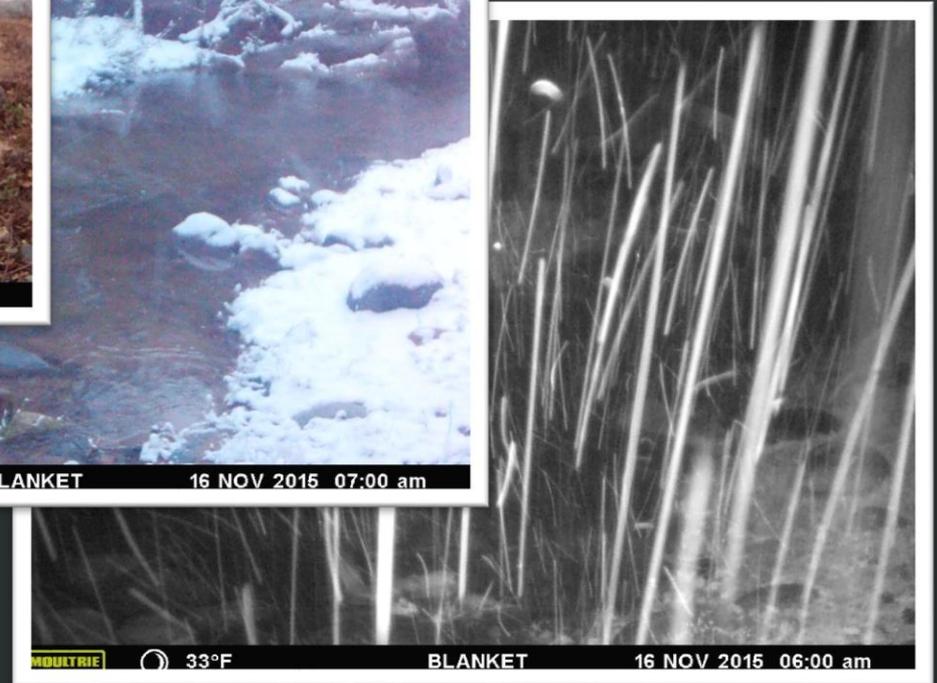
High Flow Example



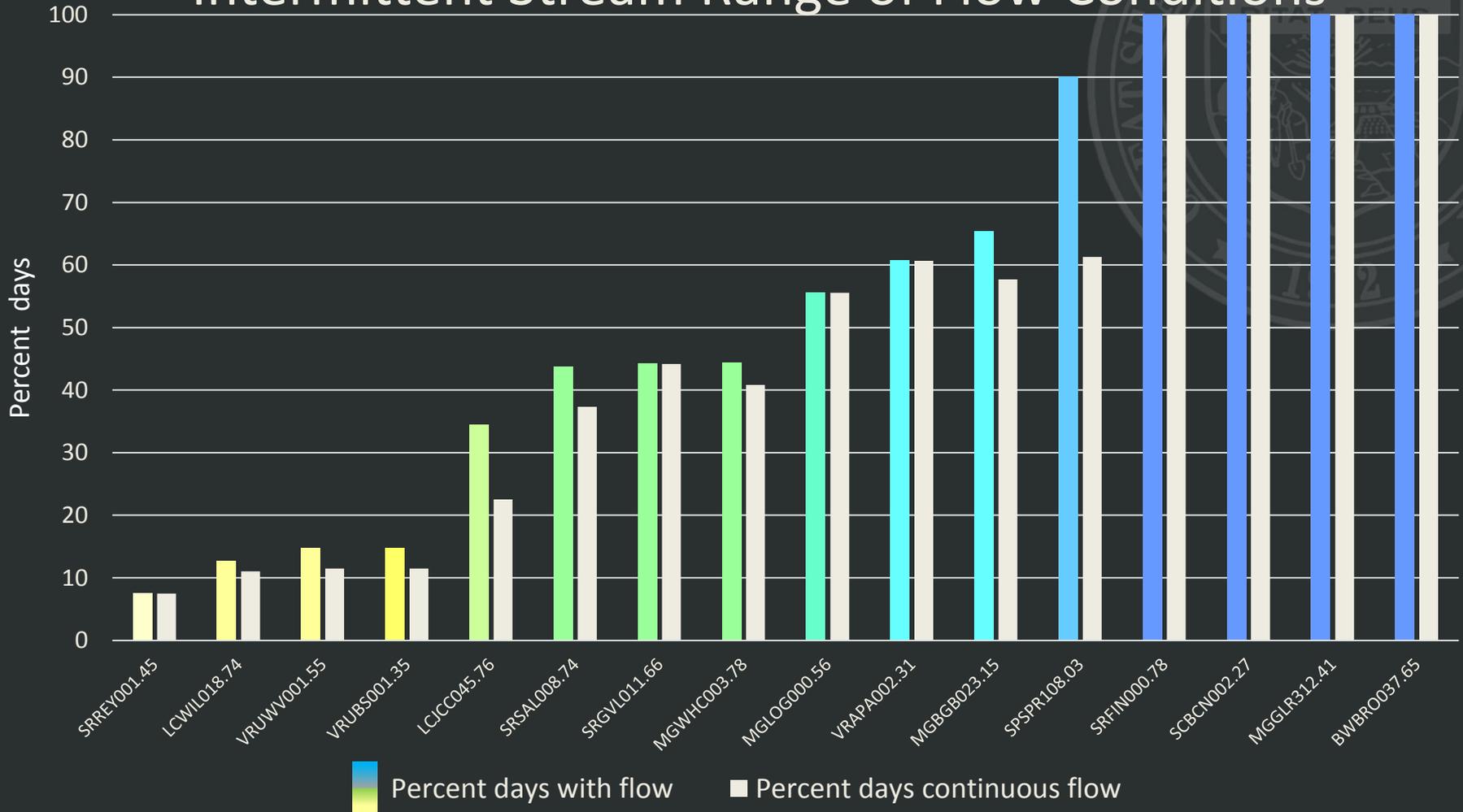
What is going on!?



Snow



Intermittent Stream Range of Flow Conditions

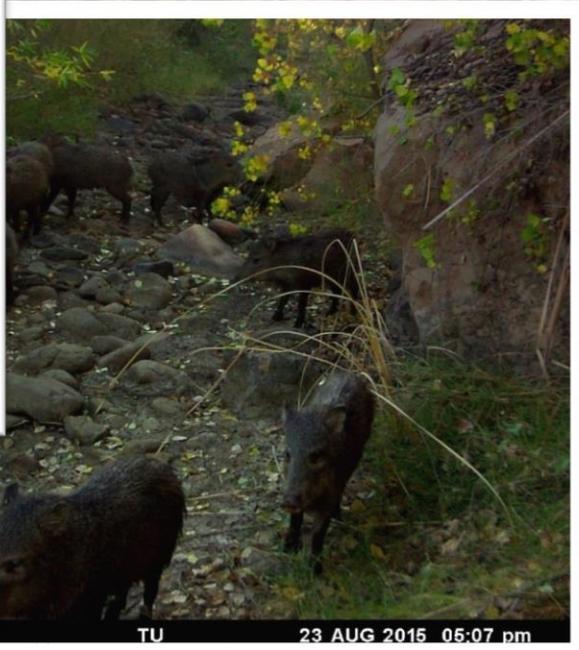


Ephemeral

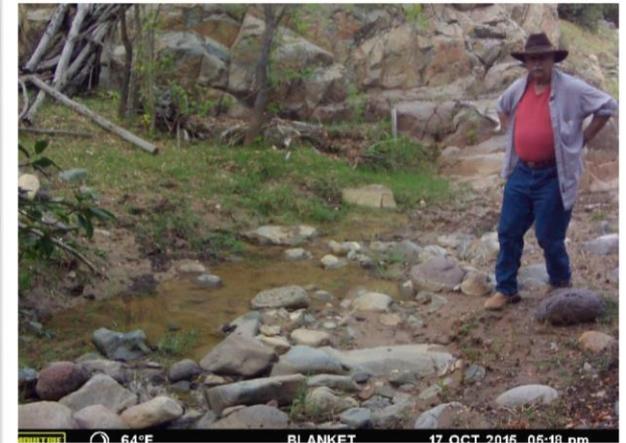


Perennial

Wildlife



Animals of another sort...

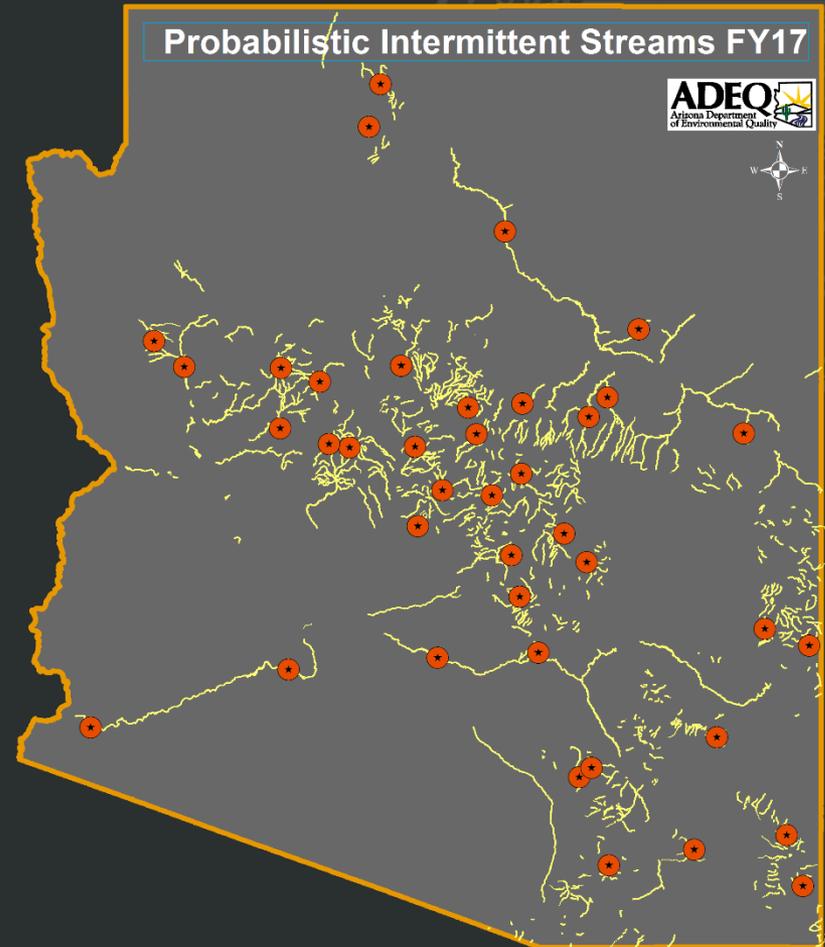


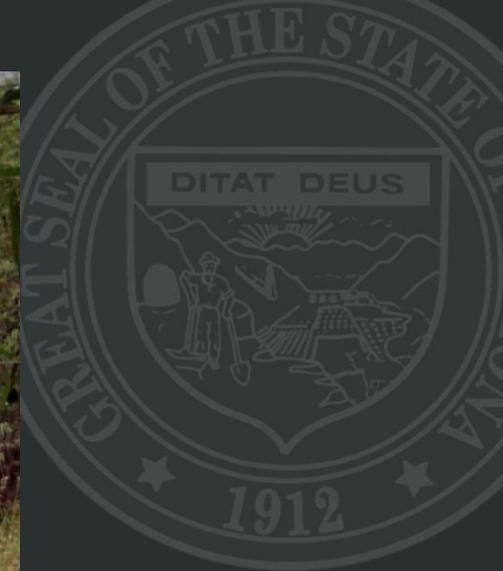
Infographic Representing Wildlife and Human Camera Encounters

Site ID	# of People = 20		# Days with Wildlife = 20	
SRREY001.45	0		6	
LCWIL018.74	2		24	
VRUWV001.55	4		47	
VRUBS001.35	1		19	
LCJCC045.76	0		49	
SRSAL008.74	0		49	
SRGVL011.66	1		50	
MGWHC003.78	2		49	
MGLOG000.56	10		42	
VRAPA002.31	1		21	
MGBGB023.15	2		60	
SPSPR108.03	0		15	
SRFIN000.78	0		48	
SCBCN002.27	617		4	
MGGLR312.41	0		12	
BWBRO037.65	4		26	

Where do we go from here!?

- Assess condition of intermittent streams for the 1st time ever in Arizona using a probabilistic design!
- Classify intermittent streams into flow categories
- Identify stressors
- Automate photo processing
- Update intermittent stream map
- Specific IBI index for intermittent streams flow categories





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Meghan Smart
ms14@azdeq.gov
602.771.4506