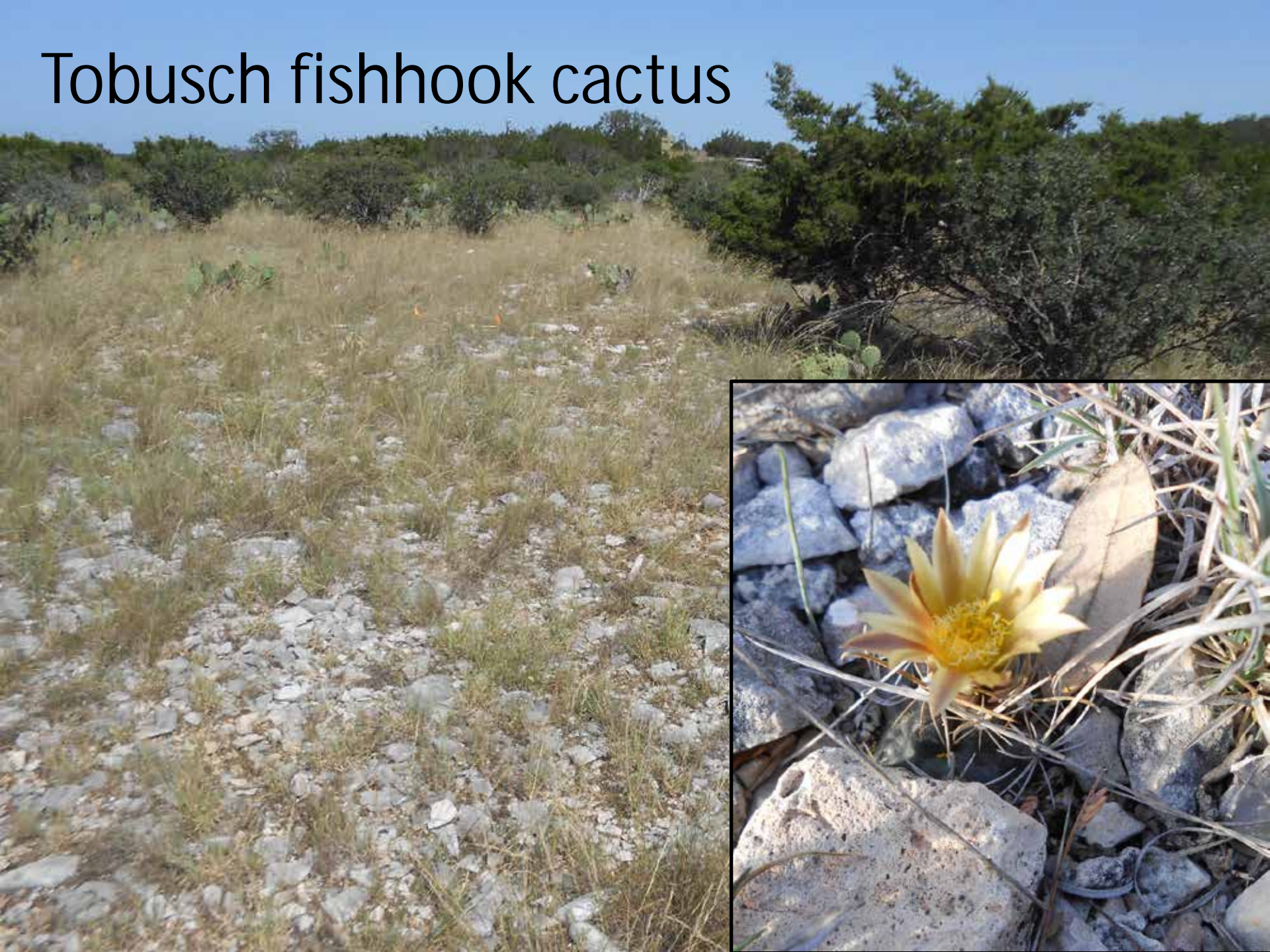


Detection probability for a
cryptic, endangered cactus
OR
Why one survey is not enough

Charlotte Reemts
The Nature Conservancy

Tobusch fishhook cactus

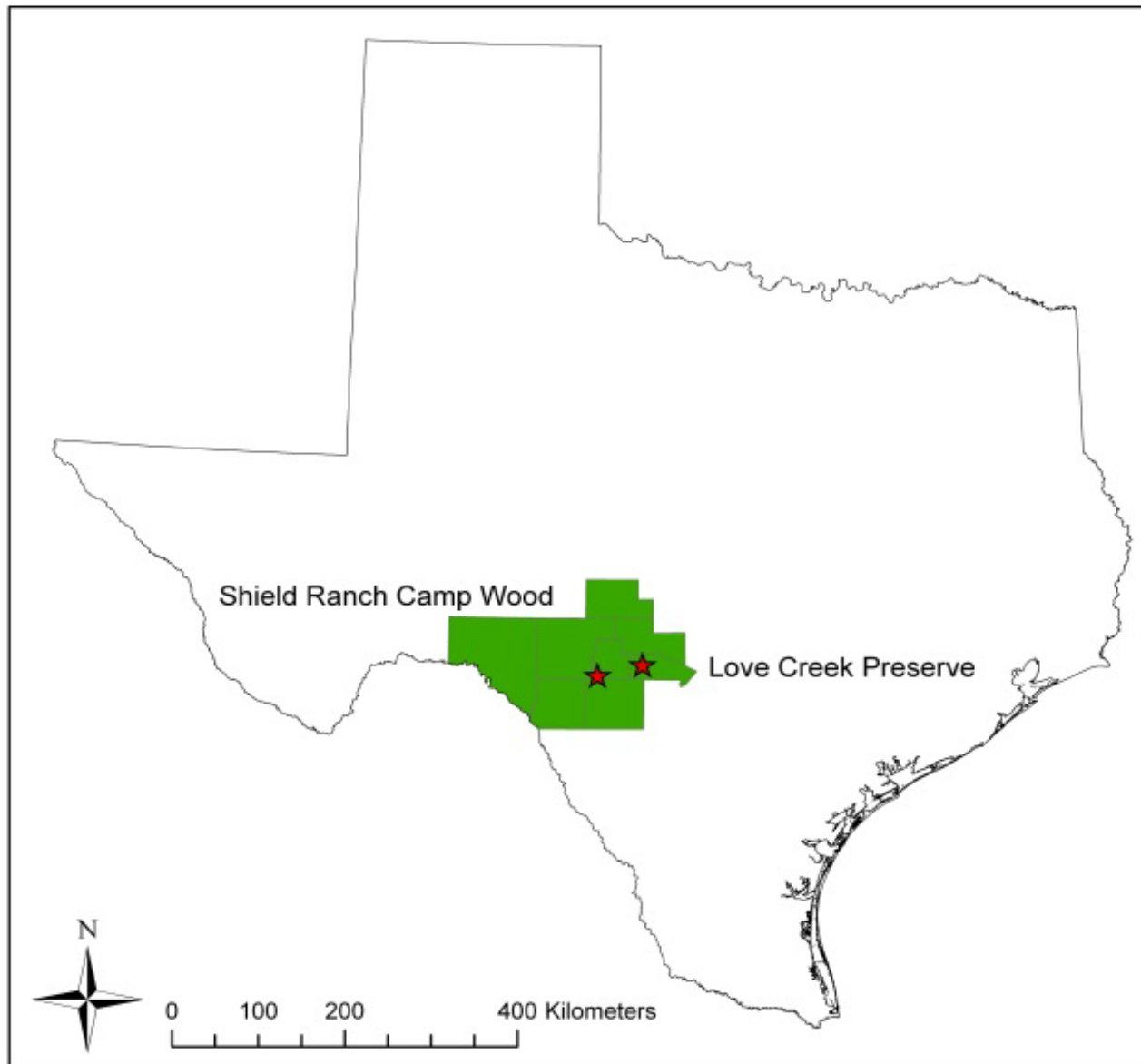


Tobusch fishhook cactus

- *Sclerocactus brevihamatus* ssp. *tobuschii*
- Listed as endangered in 1979
- Rocky, open habitat at all elevations
- Usually 1-5 cm in diameter



Range of Tobusch fishhook cactus











February Sampling

Site	Plot	No. cacti
Love Creek	1	152
Love Creek	3	104
Love Creek	4	49
Love Creek	5	72
Love Creek	6	65
Love Creek	7	50
Total		492





Number of cacti per plot

Site	Plot	February	April
Love Creek	1	152	220
Love Creek	3	104	113
Love Creek	4	49	49
Love Creek	5	72	113
Love Creek	6	65	122
Love Creek	7	50	124
	Total	492	741





Love Creek plot totals

Plot	February	April	September	Increase
1	152	220	323	113%
3	104	113	212	104%
4	49	49	73	49%
5	72	113	130	81%
6	65	122	164	152%
7	50	124	165	230%
Total	492	741	1067	117%

Love Creek plot totals

Plot	February (all)	September (>1 cm)	Increase
1	152	223	47%
3	104	148	42%
4	49	52	6%
5	72	73	1%
6	65	92	42%
7	50	121	142%
Total	492	709	44%

Factors influencing detection

- Cactus size
- Observer experience
- Surrounding substrate
- Surrounding vegetation



The image shows a natural, arid environment with a ground surface composed of light-colored gravel, small stones, and patches of dry, brownish grass. A semi-transparent grey rectangular box is overlaid on the lower portion of the image, containing the text "Overall detectability = 49%".

Overall detectability = 49%

Why should we care?

Year	Area surveyed	No. cacti
2010	5 acres (2 ha)	558

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Year	Area surveyed	No. cacti
2010	5 acres (2 ha)	558
2013	300 m ² (0.03 ha)	459
2013 (all plots)	600 m ² (0.06 ha)	1067

Conclusions

- Small plants are difficult to find
- Populations may be much larger than initial surveys suggest
- Go back to your plots!





Questions?

Funding provided by Lady Bird Johnson Wildflower Center Conservation Grant
and TPWD Horned Lizard License Plate Fund