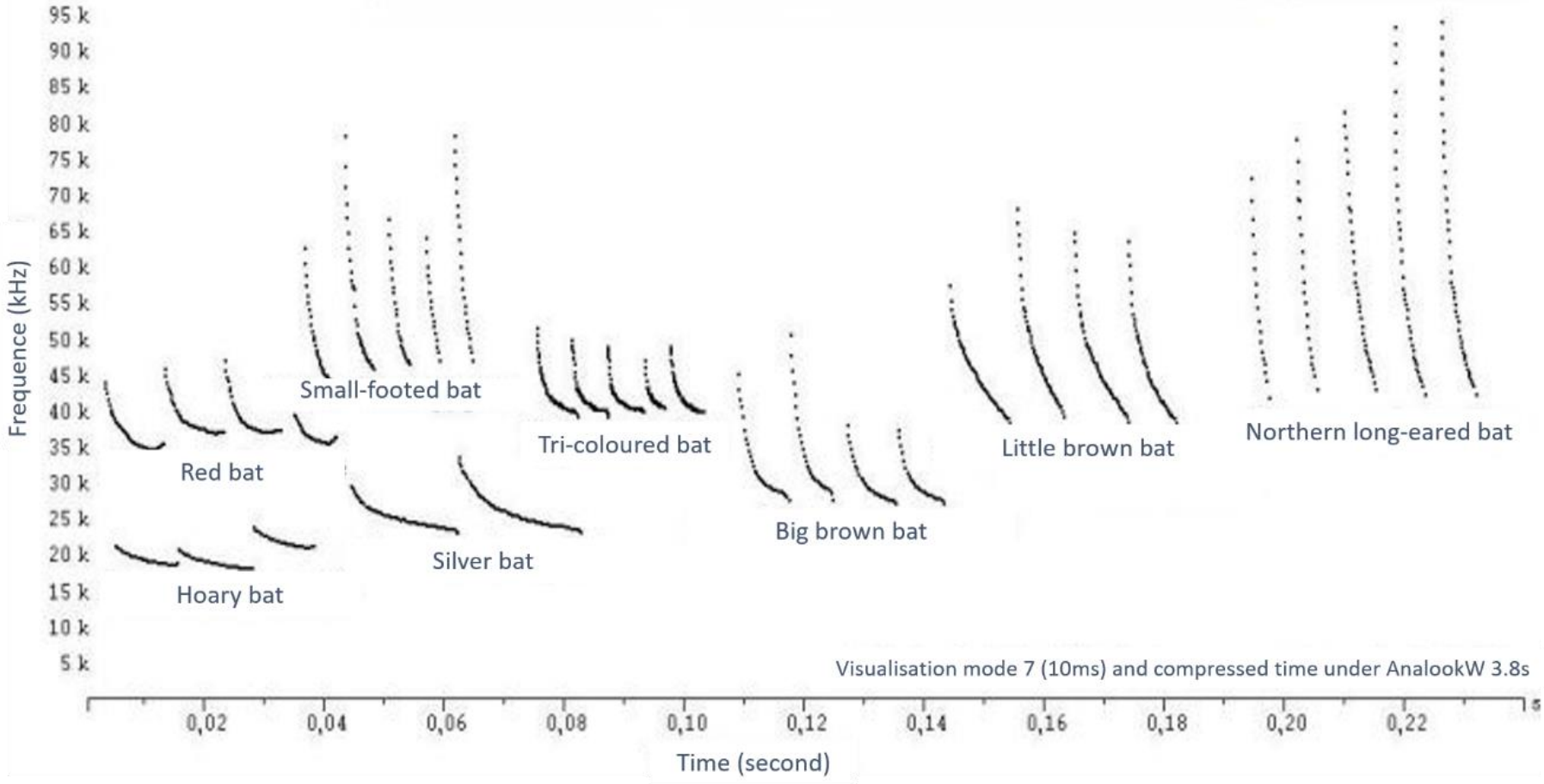
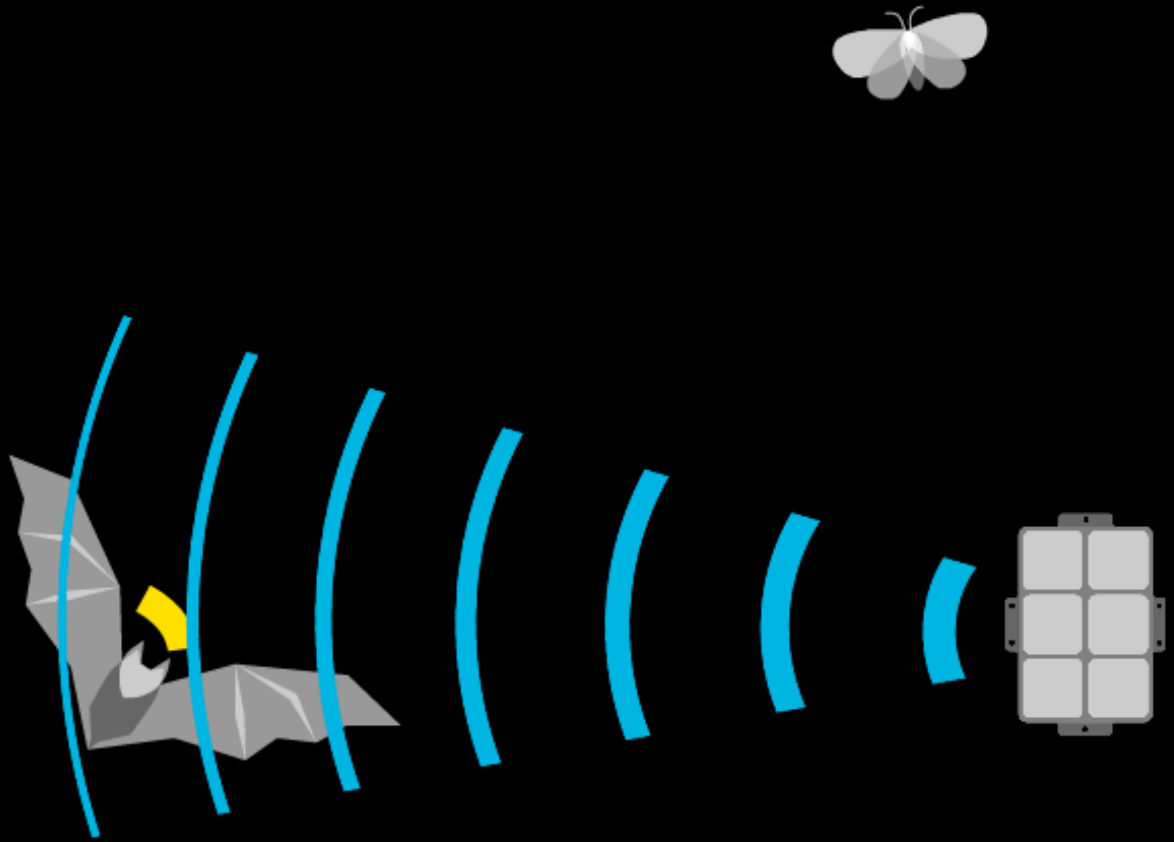
How Low Can You Go?

Past, Present, and Future Directions of an Ultrasonic Acoustic Deterrent for Reducing Bat Fatalities

Sara Weaver, PhD, CWB®
Senior Environmental Manager
Bowman


95 k
90 k
85 k
80 k
75 k
70 k
65 k
60 k
55 k
50 k
45 k
40 k
35 k
30 k
25 k
20 k
15 k
10 k
5 k
Frequence (kHz)
Small-footed bat
Red bat
Tri-coloured bat
Little brown bat
Northern long-eared bat
Big brown bat
Silver bat
Hoary bat
Visualisation mode 7 (10ms) and compressed time under AnalookW 3.8s
0,02
0,04
0,06
0,08
0,10
0,12
0,14
0,16
0,18
0,20
0,22
s
Time (second)

Bowman



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Why Go Low?

- Lowest Bat Fatalities Achievable
- Lower Curtailment Time
- Lower Frequencies Travel Farther

Ultrasonic Acoustic Deterrent

- Mounted on nacelle
- Powered by wind turbine
- Reduces overall bat fatalities
- Varying success for different species

Contents lists available at ScienceDirect

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Original Research Article

Ultrasonic acoustic deterrents significantly reduce bat fatalities at wind turbines

Sara P. Weaver [a, b, *], Cris D. Hein [c], Thomas R. Simpson [b], Jonah W. Evans [d], Ivan Castro-Arellano [b]

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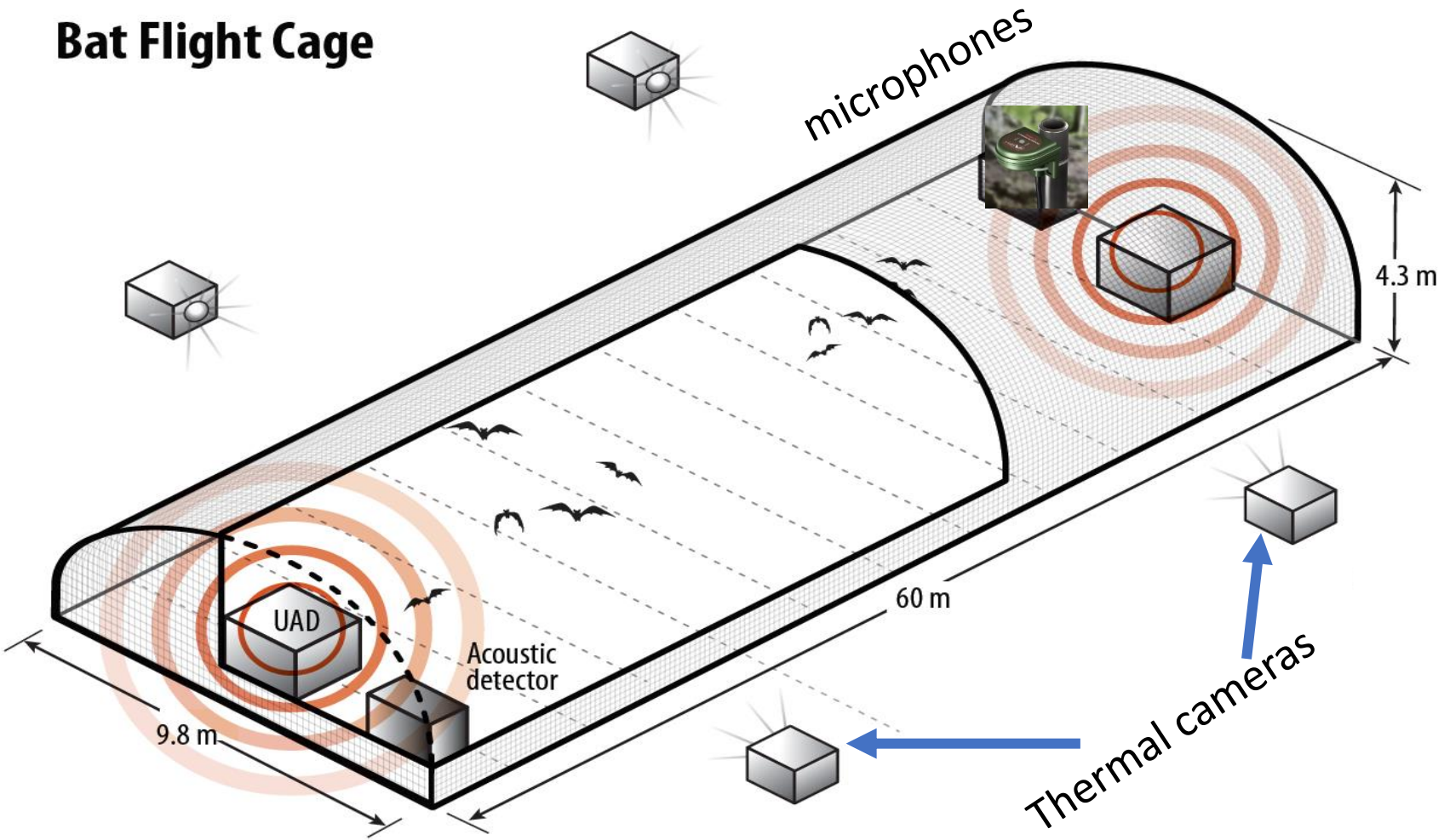
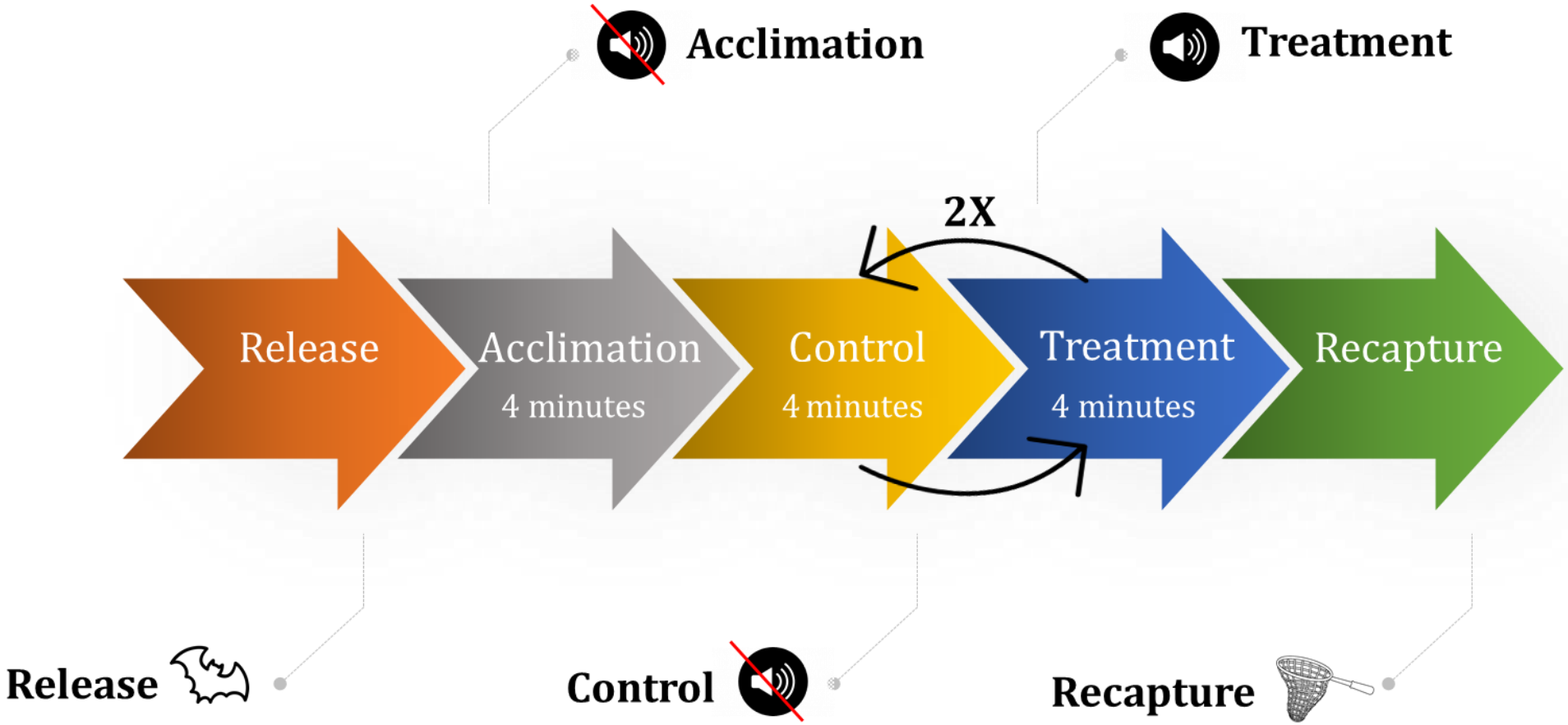
DUKE ENERGY
SUSTAINABLE SOLUTIONS


Bat Flight Cage
microphones
4.3 m
60 m
UAD
Acoustic
detector
9.8 m
Thermal cameras

FREEMAN CENTER

JHF | TEXAS STATE UNIVERSITY


Acclimation
Treatment
2X
Release
Acclimation
4 minutes
Control
4 minutes
Treatment
4 minutes
Recapture
Release
Control
Recapture

1 - 2019-10-18 21:27:53
FREEMAN CENTER
JF
TEXAS STATE UNIVERSITY

Individuals Sampled

Species	Fall Male	Fall Female	Fall Total	Spring Male	Spring Female	Spring Total	Grand Total
Myotis velifer	19	18	37	11	2	13	**50**
Tadarida brasiliensis	20	18	38	8	31	39	**77**
Lasiurus blossevillii, Lasiurus borealis	14	12	26	8	11	19	**45**
Nycticeius humeralis	14	13	27	1	9	10	**37**
Perimyotis subflavus	4	2	6	1	1	2	**8**
Lasiurus intermedius	0	3	3	0	0	0	**3**
Lasiurus ega	2	2	4	0	0	0	**4**
Lasiurus cinereus	0	0	0	1	3	4	**4**
Grand Total							**228**

Photos by Brittany Stamps

Acknowledgments

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Bowman