

# Sound levels & fireworks at Warner Park

## June-August 2025

southern wisconsin  
BIRD ALLIANCE



*Photo of fireworks at Warner Park by Scott Pigg*

## Important to note

This project was designed and conducted by small group of volunteers and Southern Wisconsin Bird Alliance. This is an observational project, and not intended to be interpreted as a scientific research study.

*We'd like to recognize our volunteers, especially Scott Pigg, for their wonderful work and generosity of time. Thank you!*

# Background

Warner Park uses - human and wildlife

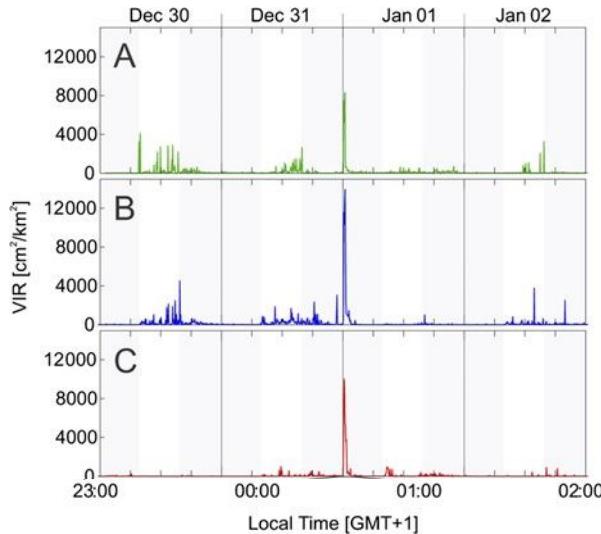
- 180 bird species recorded (nesting eagles)
- Hosts numerous fireworks displays

Fireworks/firecrackers often used as deterrence tools against birds

Scientific research<sup>1</sup> has demonstrated significant impacts of fireworks on wildlife

- Fleeing
- Flock mortality
- Premature fledging
- Reduced breeding success

<sup>1</sup>Review in Bateman et al. 2023. <https://doi.org/10.1071/PC22040>



Graph showing birds fleeing following three years of New Year's fireworks. Measured using radar. Shamoun-Barnes et al. 2011. <https://doi.org/10.1093/beheco/arr102>



Photo: Approx. 4,000 roosting Red-winged Blackbirds died of blunt-force trauma in Arkansas in 2011, after being disturbed by percussive noises and fireworks; Liz Condo/The Advocate

# Goals

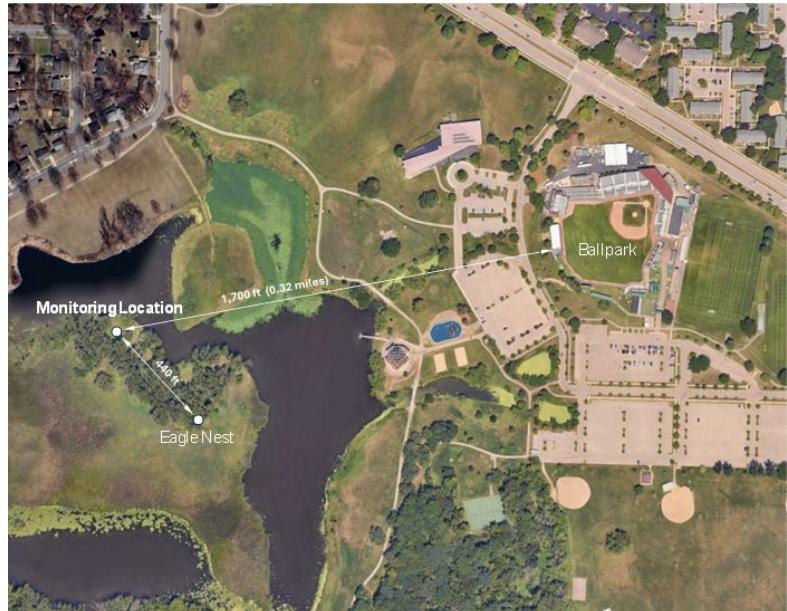


Photo of Warner Park eagle nest by Steven Smith, April 2025

1. Collect decibel information at Warner Park near the eagle nest (baseline and during fireworks)
2. Measure bird and bat calls before, during, and after fireworks
3. Look for possible connections between fireworks and bird/bat calls

# Process

1. Propose project and get approval from Madison Parks and Board of Parks Commissioners for placing monitoring equipment on Warner Park island (early 2025)



# Process

2. Work with volunteer Scott Pigg, coordinator of local sound monitoring network, to create sound devices (April/May 2025)



# Process

3. Install sound devices (June - August 2025)
  - 1 decibel meter
  - 1 bird song recorder
  - 2 bat call recorders

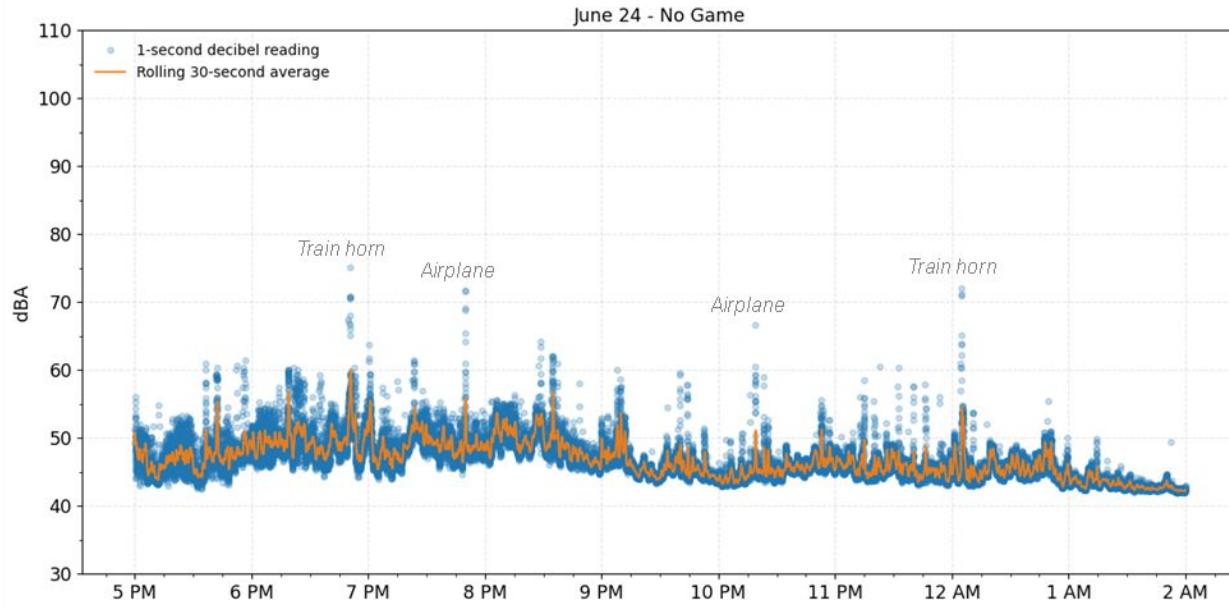
Work with Madison Parks rangers on installation

4. Summarize data (fall/winter 2025-26)



# Results

1. With no games or fireworks, baseline decibel levels at Warner Park range between 40-60 dBA (occasionally higher due to a train, airplane)



# Results

2. Decibel levels during firework shows were significantly higher than baseline values and loud events (e.g., train horns, airplanes)
  - Low decibel fireworks shows ranged from 85-89 dBA
  - Traditional fireworks shows were at 92 dBA

**LD** = low decibel

**T** = traditional

All sanctioned shows 8-9 minutes long unless noted otherwise

Date	Post-game (sanctioned)	
	Number of percussive events <sup>1</sup>	Peak decibels <sup>2</sup>
June 27th LD	6	89
June 28th <sup>3</sup>	--	--
July 3rd T, 23 min	117	92
July 4th T	28	92
July 26th LD	2	85
August 1st T	3	92

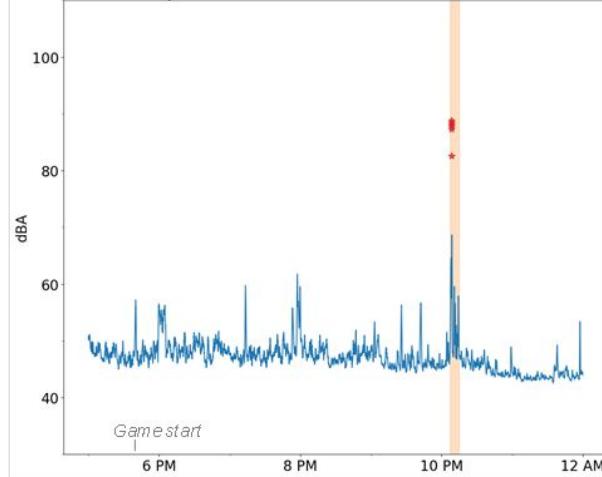
# Results

3. Number of percussive events was surprisingly high during traditional sanctioned shows & unsanctioned fireworks

*Orange bar = Madison Mallards fireworks*

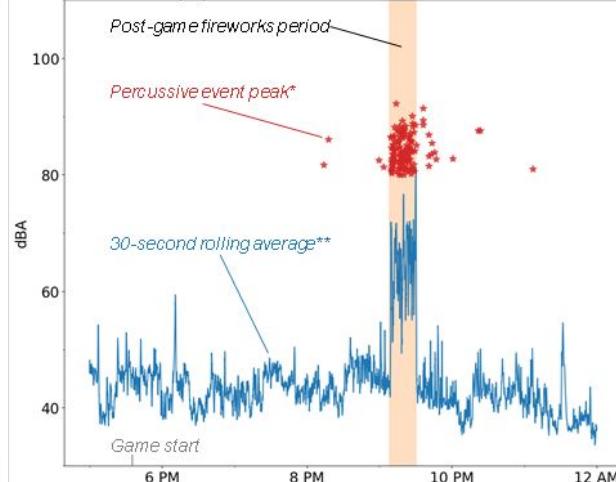
Low Decibel

June 27 - Mallards Game with Fireworks



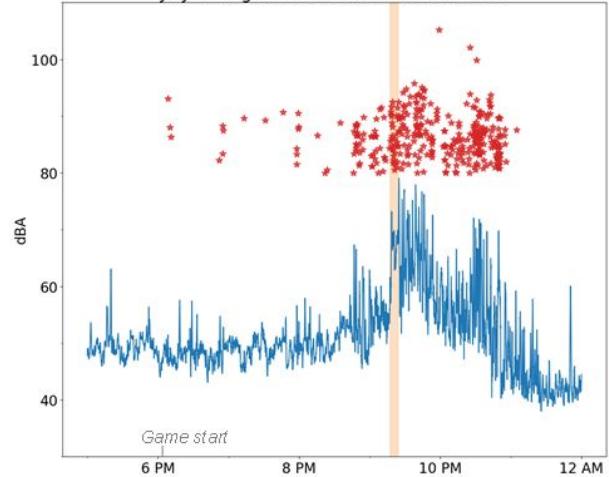
Traditional (23 min)

July 3 - Mallards Game with Fireworks



Traditional

July 4 - Night Mares Game with Fireworks



# Results

3. Number of percussive events was surprisingly high during traditional sanctioned shows & unsanctioned fireworks

Table 2. Percussive noise events and peak decibel levels on days with fireworks, by fireworks source.

Date	Post-game (sanctioned)		Unsanctioned	
	Number of percussive events <sup>1</sup>	Peak decibels <sup>2</sup>	Number of percussive events <sup>1</sup>	Peak decibels <sup>2</sup>
June 27th LD	6	89	0	--
June 28th <sup>3</sup>		--	--	--
July 3rd T, 23 min	117	92	19	91
July 4th T	28	92	337	105
July 5th <sup>4</sup>	--	--	128	106
July 26th LD	2	85	0	--
August 1st T	3	92	0	--

<sup>1</sup>A percussive event is here defined as a 1-second period with a maximum 1/8<sup>th</sup>-second dBA reading that is 80+ dBA and is 30+ dB higher than the 1/8<sup>th</sup>-second minimum for the second.

<sup>2</sup>Maximum of 1/8<sup>th</sup> second peaks across all percussive events, A-weighted.

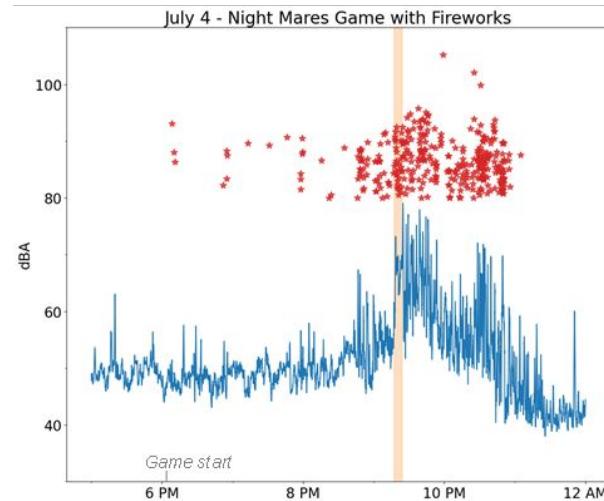
<sup>3</sup>No decibel data available on June 28<sup>th</sup> due to meter battery failure.

<sup>4</sup>No post-game fireworks on July 5<sup>th</sup>.

# Results

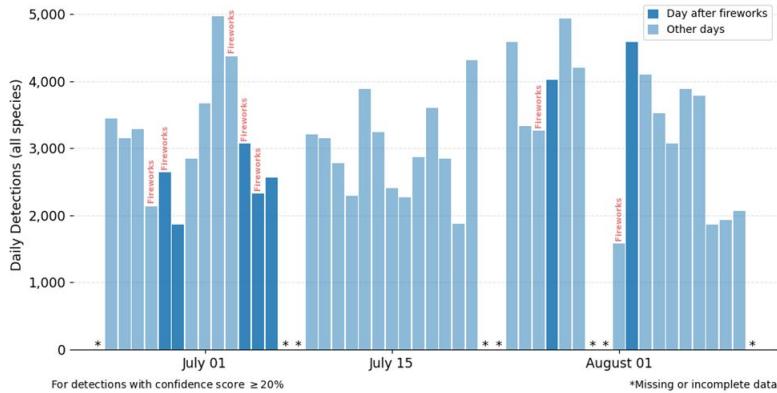
## 4. There were MANY unsanctioned fireworks

Date	<i>Unsanctioned</i>	
	<i>Number of percussive events<sup>1</sup></i>	<i>Peak decibels<sup>2</sup></i>
June 27th	0	--
June 28th <sup>3</sup>	--	--
July 3rd	19	91
July 4th	337	105
July 5th <sup>4</sup>	128	106
July 26th	0	--
August 1st	0	--

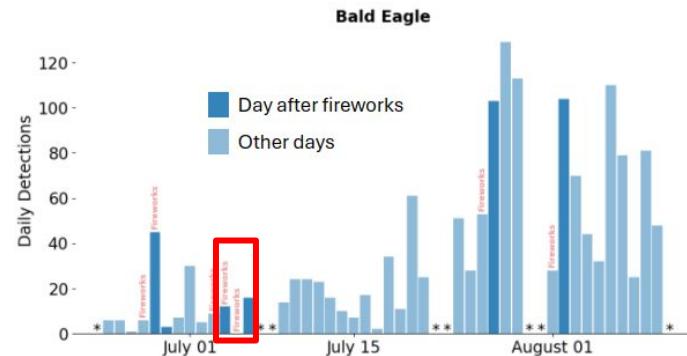


# Results

5. There was no consistent detectable connection between fireworks and bird/bat calls following shows
  - Our chosen measurement (calls) may not indicate potential effects of fireworks on birds and bats
  - Other studies may better reveal impacts of fireworks – noise, light, associated chemicals



Observed zero Bald Eagle calls on July 5  
(following highest percussive count).



# Our recommendations

1. Allow fewer fireworks shows.
2. Require all sanctioned shows be low-decibel and non-percussive.
3. Increase resources for enforcement of illegal, unsanctioned fireworks in Warner Park.
4. Continue expanding study & partnership in Warner Park area in 2026.



*Julie McGuff*

# Thank you & Questions

