



# Raptors and Recovery Ecotherapy: Analysis of Human and Animal Welfare



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## Background and Objectives

Possumwood Acres Wildlife Sanctuary (PWA) in Hubert NC provides public educational opportunities with various wildlife species. Recently, they have expanded their programs to include Animal Assisted Therapy (AAT), specifically for armed service members. While benefits of AAT are well documented with domestic animals such as dogs or miniature horses, there has been little work done using wildlife species such as raptors.

### Research Objectives:

- To determine whether the use of rehabilitated raptors in animal-assisted therapy induces a stress response by evaluating behavioral signals and physiological markers before and after human interactions.
- Determine if wildlife assisted therapy is beneficial for both the participating animal and human through behavioral analysis and survey.

## Methods

The first phase of the project required construction of ethograms for evaluating raptor behavior and the creation of multiple surveys to evaluate human responses to the interactions.

### Raptor Ethogram

We surveyed the wildlife rehabilitators at PWA to identify both positive behaviors (indicative of good welfare) and negative behaviors (indicative of stress). Additional indicators were identified during an extensive review of the available literature. This synthesis produced the final raptor ethogram.

### Human Surveys

Similarly, we assimilated material from prior work with raptors from PWA with information collected during an extensive literature review. The assembled materials were delivered to PWA for review, modification, and implementation. Throughout this process every effort was made to produce survey instruments that could easily be processed by the rehabilitators, including the use of QR codes that allow participants to easily complete the surveys and to automate the data collection process.

Please note that all participants will be anonymous active military or veterans with PTSD. Data will be collected by PWA and analyzed by student researchers. All identifying information will be removed by PWA staff before being transferred to DVU.

## References and Acknowledgements:

We'd like to thank Dr. Gary Fortier, Karen Sheldon, Toni O'Neil, Possumwood Acres Staff, and the Schoenfeld Foundation.

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2. Doyon-Degroote, S. (2023). Impact of education programs on behavioral and physiological wellbeing. (Masters of Science, Concordia University).
3. Hoyt, Kaleigh. (2018). "Raptors and Humans: Exploring Alternative Therapies in Non-Clinical Environments using Birds of Prey." Order No. 10838164, University of South Florida.
4. Park, F. (2023). Behavior and behavioral problems of Australian raptors in captivity. *Seminars in Avian and Exotic Pet Medicine*, 12(4) doi:10.1053/s1055-937x(03)00038-0
5. Urita, C., Kusuda, S., & Rooney, N. (2022). Physiological and behavioural assessments of stress levels in owls housed at owl cafes. *Animal Welfare*, 31(3) doi:10.7120/09627286.31.3.001
6. Wickert, S. (2020). Determining an optimal observation method to assess behavior of raptors in captivity

## Analysis

### Ethogram Data – Reliability

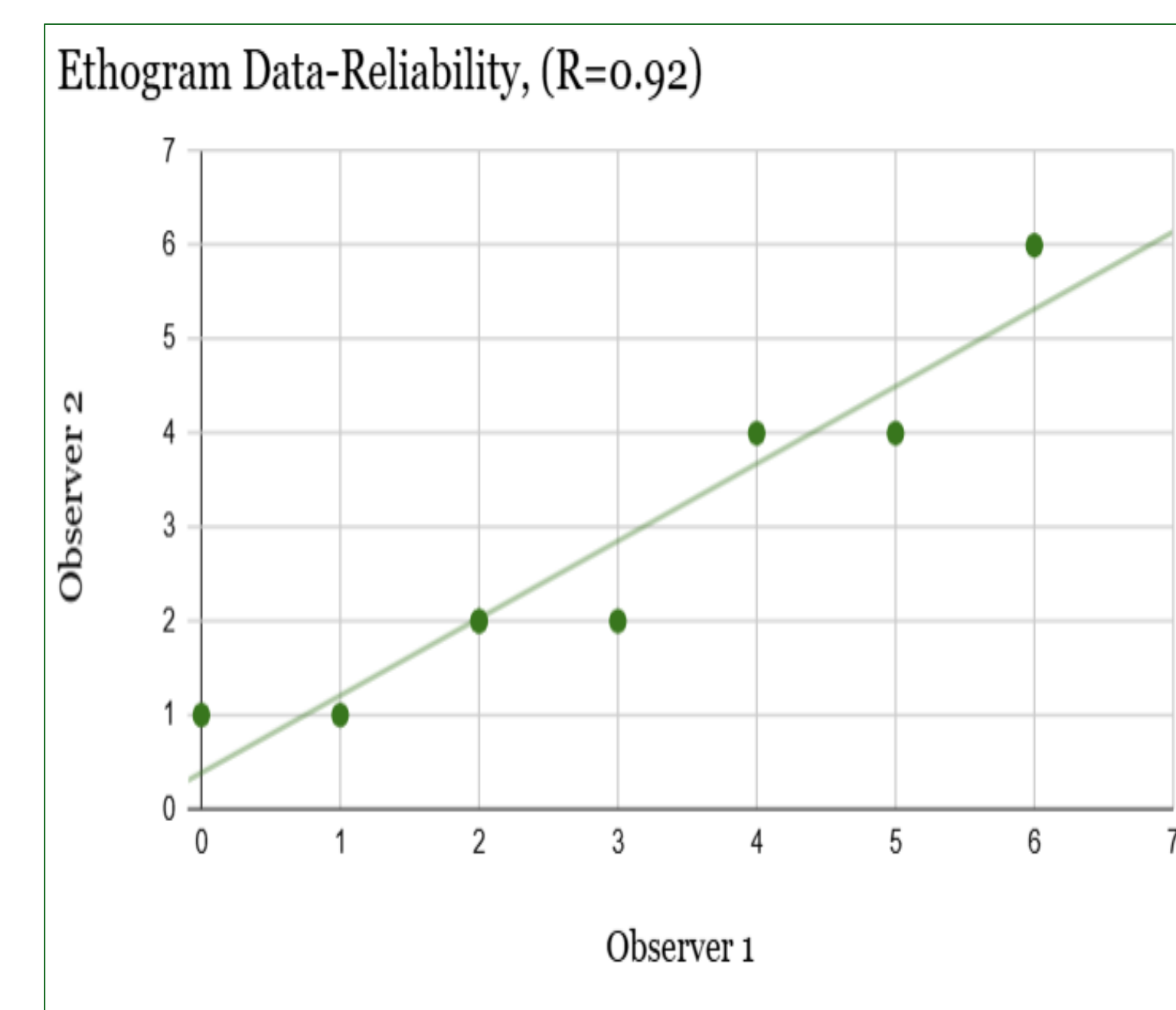
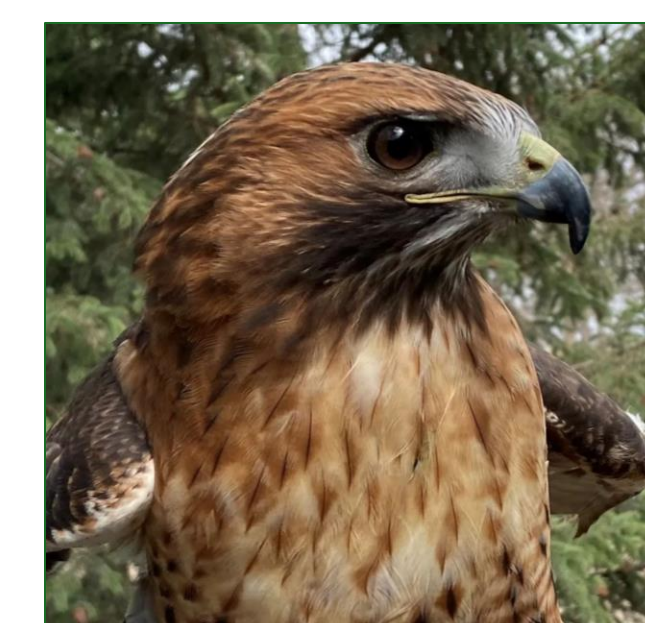
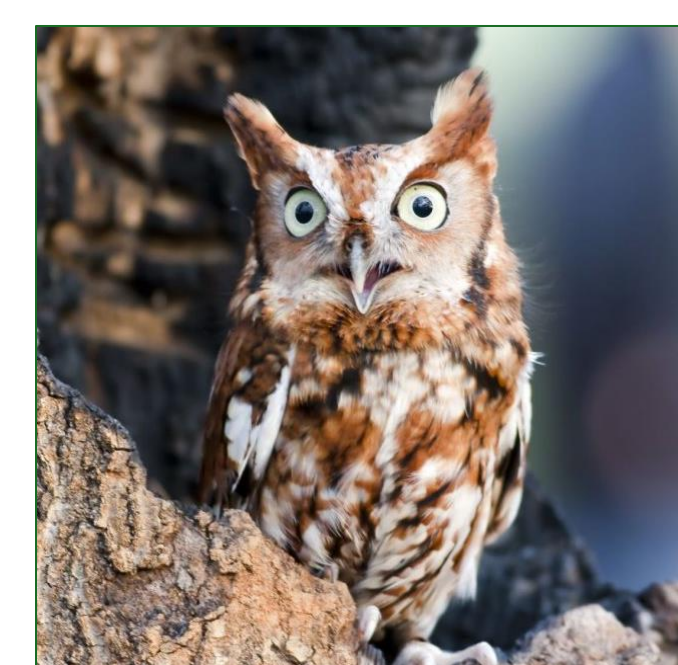
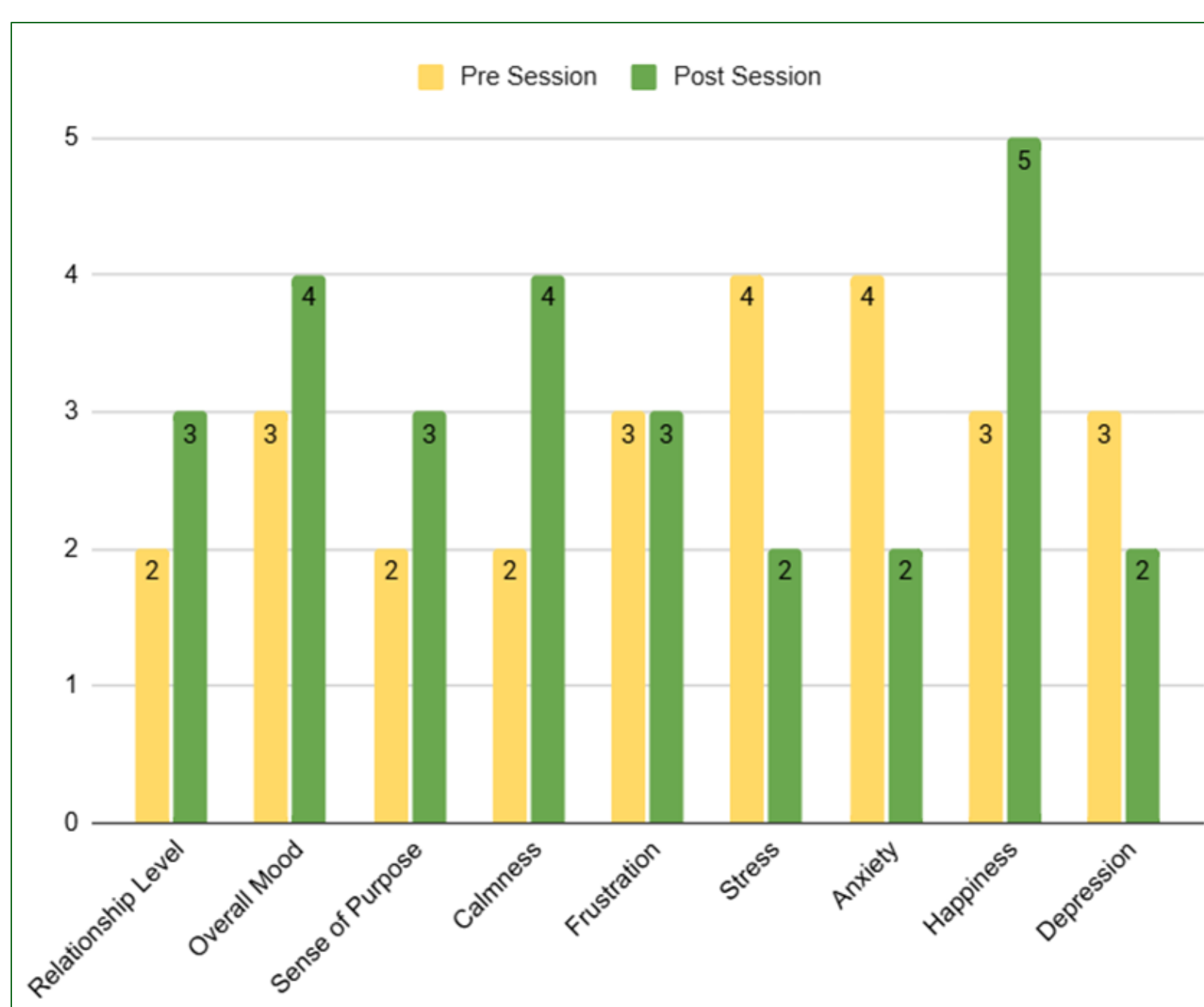
Videos will be scored by multiple students. The reliability of the data will be evaluated via the correlation between observers. The correlation must be  $\geq 0.9$  for use in the study; students will undergo additional video training if this benchmark is not met.

### Raptor Behavioral Changes

Pre/post data for each raptor will be compared using a chi-square test to identify statistically significant differences.

### Survey Data

Data from human participants across multiple sessions will be evaluated to identify any changes in attitudes over time, using a repeated-measures ANOVA.



	Preening	Body Fluffing	Stretching	Baiting	Head Bobbing	Panting	Posturing	Vocalizations
Observer 1	2	5	6	1	3	2	4	0
Observer 2	2	4	6	1	2	2	4	1

## Discussion

The first semester of this project focused on literature reviews, developing instruments and techniques of data collection and evaluation. We assisted PWA staff in establishing a seamless process for data collection, including a shared database/Google drive, video instructions, human surveys, and an automated process for sharing data.

As data is received, analysis will be continued during the Spring 2025 semester to better quantify the effects of wildlife therapy for both raptors and individuals with PTSD. The results of this research may contribute to modification of animal-assisted therapy incorporating raptors. Additionally, the data may help wildlife rehabilitators in funding and outreach efforts, providing support in an industry that relies heavily on community support.