**Introduction**

- Birds of prey are common patients at wildlife care clinics around the country.
- We know little about the correlates among behavioral response to handling, time in captivity, and physiological stress in these animals.
- Periods of high stress can adversely affect physiological condition in many species [1] and may affect time to recovery in clinic patients.
- A better understanding of how behavior predicts physiological stress could improve the quality of patient care.
- Here, we investigated whether response to handling and the time in captivity could improve the quality of patient care.

**Study Site**

- We studied barred owls at the Wildlife Care Clinic at Iowa State University’s Loyde Veterinary Medical Center.
- Patients were housed in metal cages.
- Drapes hung over cage doors to inhibit patients from becoming habituated to humans or unnecessarily stressed.
- Patients were housed in metal cages.

**Methods**

- We observed the three barred owls admitted to the Wildlife Care Clinic from November 2015 through February 2016.
- We recorded the following behavioral responses to handling: call, snap, bite, wing flap, escape attempt.
- The following morning, we collected fecal samples deposited by patients during the night (Fig. 1).
- We determined fecal CORT concentrations via enzyme immunoassay [2].

**Results**

- We used linear mixed-effects models in R, version 3.2.2.
- For each patient, the number of behavior types exhibited and fecal CORT were averaged per observation day.
- CORT data were Poisson distributed and log-transformed for analysis.
- On March 10, patient 3096 exhibited CORT levels 7.5 standard deviations above the mean; these data were excluded from final analyses.

- Fecal CORT levels did not predict whether or not owls recovered from injury, \( P = 0.40 \).

**Discussion**

- Both the number of different behaviors exhibited during handling and fecal CORT levels appeared highest at ~60 days in captivity.
- The number of different behaviors exhibited during handling tended to predict CORT levels: owls exhibiting a greater number of behaviors also exhibited higher fecal CORT.
- Because our number of subjects was limited, at least two possibilities could explain these patterns:
  1. Differences in behavior and CORT reflect consistent individual differences
  2. Differences in behavior and CORT reflect the effect of time in captivity
- In either case, the correlation between behavior and CORT (Fig. 4) suggests that behavior may be a useful indicator of physiological stress in owls during rehabilitation.
- Most importantly, these results provide preliminary data suggesting that further studies, over a patient’s entire time in clinic, are warranted and necessary to understand the links among behavior, captivity, stress physiology, and recovery after traumatic injury.

**References**


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