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Effect of housing and husbandry practices on adrenocortical activity in captive Canada lynx (*Lynx canadensis*)

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Abstract

*In recent years, there has been an increasing focus on the study and assessment of animal welfare in captive settings, such as zoological gardens and aquaria. Canada lynx (*Lynx canadensis*) are a relatively common species in zoos, yet are known to exhibit frequent reproductive problems in captive environments. We provide an exploratory analysis of housing and husbandry factors that are associated with patterns of adrenocortical activity in lynx. Adrenocortical activity was assessed using the non-invasive technique of monitoring faecal glucocorticoid metabolites (FGM). First, we calculated baseline FGM values for each individual and controlled for sex, age class, and reproductive status. The residual values were used to determine how levels of adrenocortical activity correlated with institutional husbandry practices. Second, we compared the occurrence of FGM peaks to events and disturbances recorded by keepers. Our results highlighted that adrenocortical activity is strongly correlated with: (i) the size of the enclosure; (ii) the number of hiding locations available; and (iii) the social environment. Based on our findings, we recommend that lynx should generally be housed alone (unless with dependant offspring or temporarily paired up for mating purposes), in larger enclosures and with the provision of several species-appropriate hiding locations.*

Keywords: *animal welfare, Canada lynx, captive breeding, faecal glucocorticoid metabolites, felid, stress*